

WOE TO CONTRACTORS

Our Second Quarter Hiring Survey shows that IT managers are hiring more permanent staff. Page 50



Y2K LEGISLATION

Sen. John McCain: Recently passed Y2K bill would help U.S. economy and keep tech prices down. Page 30

DIGITAL WALLETS

Although promising, this software may be a few years away from allowing hassle-free online shopping. Page 65

COMPUTERWORLD

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JEFF LEPAGE, MIS director at American Fast Freight, had his network insulated from the usual productivity-sapping Web sites, but then employees were bitten by the online investing bug

DAY TRADERS

EIGHTEEN MONTHS AGO, the big worry was employees surfing for online porn. But thanks to the stock-market boom, workers today are more likely to be hanging out at the likes of Stocks.com and ETrade.com, reports Stacy Collett. This surge in online investing clearly caught network administrators off guard: A *Computerworld* survey shows that most companies haven't updated their Internet policies or monitoring software to cover stock trading on company time. *Report is on page 24.*

INTERNET
MONITORING

PACE OF CHANGE FUELS WEB PLANS

Sites must shift offering every 60 days to thrive

BY JULIA KING
AND THOMAS HOFFMAN

The agility of a gazelle is no longer good enough. It takes a chameleon to succeed in to-

day's Internet economy.

Practically speaking, that means having the ability to change strategy at least every two months — whether you're General Motors Corp. or the online corner grocery store.

It also means nothing short of perpetual forward motion for information technology groups because "right now, it's information technologies that are driving Internet business strategies," said Gig Graham,

an analyst at Giga Information Group Inc. in Cambridge, Mass.

One of the key factors driving the new 60-day model is the warp speed with which companies now receive customer feedback via e-mail and

Pace of Change, page 85

USERS: REVAMP WINDOWS LICENSING

Poll finds IT seeking simplicity, consistency

BY DAVID ORENSTEIN

As Windows 2000 nears release, corporate users of Microsoft Corp. software are saying resoundingly that the company's licensing policies need to change because they are too

complex and ultimately too expensive.

Microsoft, which has begun to confidentially discuss proposed licensing changes with analysts, last week said it will announce a licensing structure for Windows 2000 in 30 to 90 days, as well as changes for other products designed to

Windows, page 16

WEB'S NEW COME-ON: GIVEAWAYS

Free downloads may lead to future sales, but idea spurs intellectual property debate

BY ANN HARRISON
NEW YORK

Are people ripping off your intellectual property online?

Good.

That's the way some in the music industry are approaching e-commerce: Let people download music for free, then make money selling more music, merchandise and advertising to them — and their demographic information to others.

It's a battle that pits older business models against newer ones. Traditional record labels push for stricter controls on the distribution of new music, even as they acknowledge there's no technical remedy to prevent the pirating of existing material. The new online music companies, meanwhile, embrace the digital download free-for-all. They're creating

JUST THE FACTS

Not in Harmony

The Trend: Online music distributors give away free tracks in exchange for selling more music, merchandise and advertising or collecting demographic data.

The Resistance: Major record labels are scrambling to develop specifications for digital playback devices and software that will prevent new music from being freely copied and exchanged online.

new business models that will impact many companies seeking to sell or distribute intellectual property over the Web.

That was a prime topic of conversation at last week's Streaming Media East 99 conference here.

Launch Media Inc., which offers to registered users free downloads of music playable on Microsoft Corp.'s Windows Media Player, said the strategy generates site traffic and ad sales. "We capture people and get them to come back on a regular basis. There is more economic basis for giving it away than selling it," said CEO David Goldberg.

This new model, which Goldberg said echoes the television business, was prompted

Web Come-on, page 85

A Resounding Vote

Most users seem unhappy with their licensing deals:

Should Microsoft devise a new licensing policy?

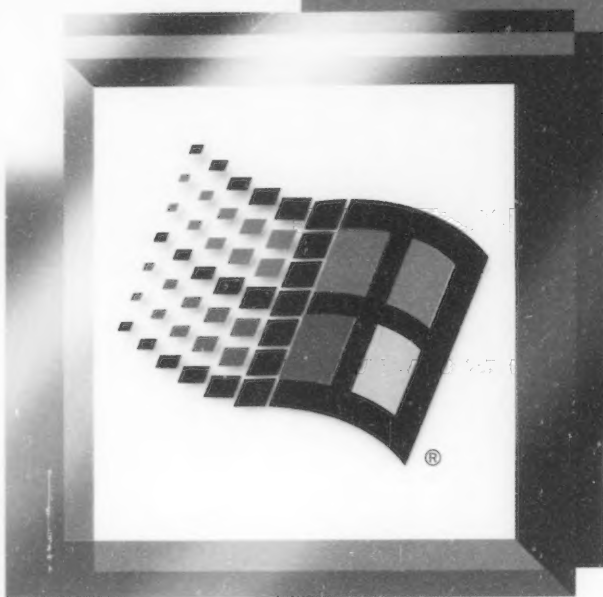
| | |
|------------|-----|
| Yes | 76% |
| No | 17% |
| Don't know | 7% |

Base: Survey of 103 IT managers who use Windows NT Server

SOURCE: COMPUTERWORLD INTELLIGENCE UNIT, FRAMINGHAM, MASS.

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ADD ANOTHER DIMENSION

Swedish start-up Cycore Computers makes it easy to bring 3-D interaction to your Web site. Emerging Companies, page 64



BILL WHO?

If you can name these original Microsoft employees pictured in this week's Flashback to 1975, we'll toss your name into a drawing for a \$250 gift certificate at gift.com. Visit our Web site (www.computerworld.com/more) for details. Page 71

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JULY 5, 1999

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THERE IS MORE ECONOMIC BASIS FOR GIVING IT AWAY THAN SELLING IT.

DAVID GOLDBERG,
CEO, LAUNCH MEDIA INC.,
ON OFFERING FREE MUSIC DOWNLOADS
TO DRAW PEOPLE TO ITS WEB SITE.
LAUNCH.COM IS AMONG A NEW BREED
OF RETAILERS CHALLENGING THE
TRADITIONAL RECORDING INDUSTRY.
SEE PAGE 1.

AT DEADLINE

GTE Sues for Y2K Costs

GTE Corp. has sued five insurance companies in an effort to recoup roughly \$400 million in year 2000 system remediation costs. The June 18 federal lawsuit, considered a first by analysts, is aimed at compensating Irving, Texas-based GTE for some of its Y2K expenditures. Defendants include Allianz Insurance Co. in Germany and Allendale Mutual Insurance Co. in Johnston, R.I.

Insurer Cuts IT Staff

Boston-based Liberty Mutual Group will cut 75 people from its 1,200-person information technology unit, effective July 6. The staffers being eliminated work on older mainframes and systems that are being retired, a company spokesman said.

Anonymity Key Online

The benefits of anonymous online communication outweigh its potential harm, and government restrictions in that area could impede development of the Web, according to a study released by the American Association for the Advancement of Science. The report recommends allowing online communities to set their own policies and to inform users about the extent to which their identity is being disclosed.

State Won't Outsource

The state of Connecticut ended efforts to outsource most of its IT functions after cost projections showed no substantial savings, an official said. The state considered a \$1 billion, seven-year agreement with Electronic Data Systems Corp. in Plano, Texas, but projections indicated that it might cost the state \$1.37 billion.

Short Takes

MICROSOFT CORP. said it's cooperating with an investigation by the U.S. SECURITIES AND EXCHANGE COMMISSION related to its accounting reserve policies, which evaluate assets and sales. . . . THE BOEING CO., which has 175,000 PCs in use, has selected DELL COMPUTER CORP. as its worldwide corporate standard for desktop and notebook PCs for three years.

Smaller Users Hail Oracle Price Scheme

Online, standardized pricing will free firms from byzantine negotiating process

BY STEWART DECK
AND CRAIG STEDMAN

THE SINGULAR, standardized pricing model promised by Oracle Corp. sounds like a dream come true for some midsize companies that still wear the scars of battling through pricing negotiations with the database maker. But large corporate customers may squawk at the idea of losing special discounts they have come to expect.

Industry analysts said Oracle hasn't been affected too greatly by pricing pressures, so it may not be hurt by competitors that undersell it once it openly states its prices.

A month after Oracle CEO Larry Ellison pledged to make Oracle a fully functioning online business by next summer, he and other company executives said that, among other things, becoming an online business would require a standardized price list that offers discounts for volume only, said Jeremy Burton, a vice president of server marketing at Oracle.

No More Bazaar

That's far different from the current Oracle sales process that Ellison has called a "Turkish bazaar" and is standard practice throughout the industry. It also takes a month or more just to arrive at a final, acceptable price.

Many companies hate to negotiate with Oracle so much that they call in a third party just to handle final pricing, said Richard Niemiec, a Lombard, Ill., consultant and executive vice president of the International Oracle Users Group. "That's ridiculous. It shouldn't be that hard," he said.

But Oracle may face some obstacles. Judy Hodges, an analyst at International Data Corp. in Framingham, Mass., said holding the line on pricing could be harder on the application side of Oracle's business if

rivals such as SAP AG don't change their everything-is-negotiable approach to sales.

"For Oracle, this would certainly simplify things," Hodges said. "But does that mean there's no more negotiating for customers? I think not."

Indeed, large companies like the perks that heavyweight status brings. AMP Inc., a Harrisburg, Pa.-based electrical connector maker with \$6 billion in annual revenue, enjoys a nice Oracle discount.

"We worked a contract for a 50% discount off of production licenses and 25% off of development licenses. If you're a good-size organization, you can wheel and deal," said Donald Smith, a team leader at AMP's global information management division.

It's the smaller firms that the online, standardized pricing

appeals to. Keith Bearden, CIO at dental equipment maker A-dec Inc. in Newberg, Ore., said being freed from having to wheel and deal with Oracle would be a big step in the right direction as long as the standard price list also includes a less complicated setup of software license categories.

"I hate working a deal with them," said Bearden, who has been an Oracle customer for 10 years. "Their licensing model is very, very difficult [to understand]. I've had experiences where even some of their salespeople get confused."

Two years ago, Bearden said, he had to pony up an extra \$300,000 for an Oracle database because of the way Oracle interpreted a contract A-dec had signed with Baan Co. for its enterprise resource planning applications. Oracle threw some application development and reporting tools into the deal, Bearden said, but that didn't fully take away the sting.

Merv Adrian, an analyst at

Cambridge, Mass.-based Giga Information Group Inc., said pricing schemes are very rarely discussed a year in advance of implementation.

IBM adopted a per-processor pricing scheme last month and has published its prices on the Web for at least a year. Jeff Jones, an IBM database marketing manager, said users have demanded simplicity. "If everything is a special bid, customers don't know how much they're really paying, and that's just not appropriate anymore," he said. ■

Pricing Phases

HOW SALES CURRENTLY WORK

■ Customer spends months working out application, system, support and contract details

■ Customer can spend as much as another full month discussing the final price

WHAT ORACLE IS PROPOSING

■ Focusing energy on working out application and system details

■ Speeding up process with online contracts

■ Using standardized pricing to close deals faster

Supply-Chain Vendors Prep Application-Hosting Services

But search is still on for interested users

BY CRAIG STEDMAN

Supply-chain software vendors are adding a twist to the emerging application-hosting business by offering to run collaborative forecasting and planning setups for groups of users.

Atlanta-based Logility Inc. plans to launch that kind of hosting service this week, along with a more typical one for midsize companies looking to do internal demand and production planning. Logility's entry follows a similar collaborative hosting announcement last month by I2 Technologies Inc. in Irving, Texas.

But like many other vendors jumping on the application-

hosting bandwagon, Logility and I2 are both still waiting for users to sign up.

The new services are aimed at retailers and manufacturers that want to set up a Web to exchange business data and do joint planning with their suppliers and customers.

For example, Inland Paperboard and Packaging Inc. plans to be one of the early buyers of collaborative planning software that Logility is due to ship this fall. Indianapolis-based Inland expects to set up a pilot supply-chain collaboration project with one of its customers later this year.

But Ken Smith, Inland's manager of electronic commerce, said the company will run the collaborative planning application itself — at least at the start. "We're not far enough

down the road to need [help hosting the software]," he said.

Heineken USA Inc. used servers at Logility to test and debug a Web-based order-entry and collaborative planning system that was fully rolled out to its 450 beer distributors late last year. Being able to run the system there might have been helpful in the early going, said Andy Thomas, vice president of operations planning at the White Plains, N.Y., company.

But long-term hosting probably wouldn't have fit with a goal to give Heineken's workers "the sense that this is a mission-critical system," Thomas said. "Our mind-set was that this wasn't just another system and shouldn't be treated as one."

Still, Stacie McCullough, an analyst at Forrester Research Inc. in Cambridge, Mass., said letting a vendor run the software could free users to focus on the thornier side of supply-chain collaboration: building the business relationships needed to exchange sensitive business data over the Web. ■

Need to Process and Protect Large Amounts of Data?

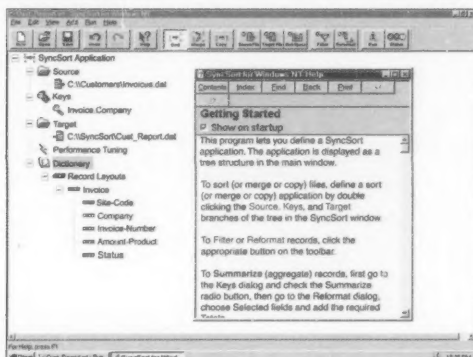
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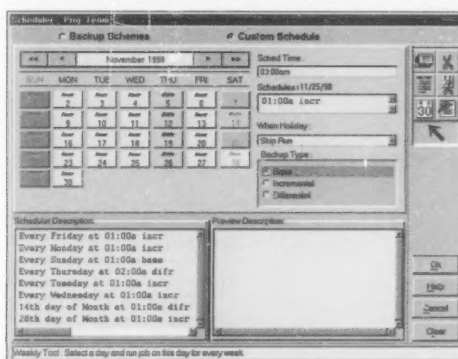


A familiar Windows-like graphical user interface gives you drag-and-drop access to all of SyncSort's powerful features on NT.

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whether it is running UNIX, Windows NT, or NetWare. Yet centralized administrative control is always maintained through an intuitive drag-and-drop graphical user interface. Support for efficient online and offline database backup is also included.

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Data warehouse specialists recently voted Syncsort one of the top vendors in the prestigious "Data Warehouse 100." This honor reflects not only the importance of Syncsort products in warehouse development and management, but also the high quality of Syncsort's responsive, reliable customer support.

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Data Warehouse to Drive Online Marketing at GM

Central repository will pull customer data from all car, truck, financial units

BY BOB WALLACE

IN A RACE against its rivals to create lasting customer relationships, GM is building a massive data warehouse that will include detailed consumer information for marketing purposes.

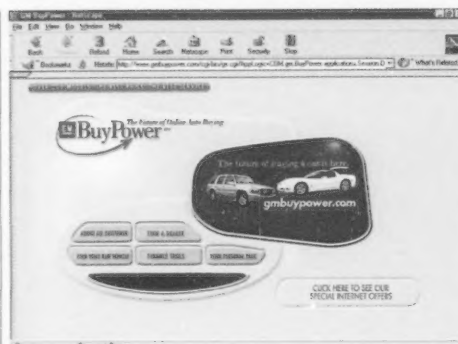
The project will link standalone customer databases from its car and truck divisions, car leasing, and home mortgage and credit-card units to a central repository with ties to the company's international operations.

The data warehousing effort was designed in part to supercharge General Motor Corp.'s 3-month-old BuyPower online

car shopping service (www.gm Buypower.com) and cross-sell customers on GM financial services.

"What this will do is greatly increase our ability to understand who we're doing business with and extend the relationship by [offering] things they need over time," said Rick Lee, GM's general manager of fleet and communications operations in North America. "If we know, for example, that a customer has had a baby, we'd proactively contact them to see if they would want information on a minivan," he said.

GM is racing other large automakers such as Ford Motor Co. and DaimlerChrysler to



GM HOPES the warehouse will supercharge its online shopping service

build a central customer data warehouse. Such a project presents several challenges, said Joe Bione, a partner at Deloitte Consulting's automotive practice in Detroit.

"The automakers have a wealth of data stored in many different places, but operationally, bringing them together is a big struggle because you're talking about managing

a million bytes of data that changes daily in the process," Bione said.

The next two steps are to determine how best to make use of the data and how extensively to market using GM's Web sites and e-mail, he added.

GM officials declined to divulge the project cost, technology products used and details on the marketing strategy they will pursue.

The data warehousing effort coincides with GM's plans to test systems around the world that support BuyPower, such as the search engines that locate models available at specific dealers.

Ann Blakney, national director at BuyPower, said GM is looking to enhance the site by selling auto parts online. The site also offers discounts on GM's OnStar satellite positioning systems.

Between its March 10 launch and May 31, BuyPower offered an Internet-only promotion on Buick Regals.

The offer helped sell 3,000 units of the model, which represented 27% of all Regals sold in that time period. ▀

App Lets Domino's Speed Through Net Traffic

Helps supply chain deliver on time

BY SAMI LAIS

Americans ate an average of 23 pounds of pizza per person last year — and this year they want more. So Domino's Pizza Inc. is making sure its stores have enough cheese and pepperoni by installing technology to improve the response time of its supply-chain network.

The Ann Arbor, Mich.-based pizza maker has installed Packeteer Inc.'s PacketShaper bandwidth manager at six of its 18 distribution centers and will install the rest by year's end.

After 1998's record 338 million pizzas, the old ordering system and nightly batch processing were groaning under the load. The company also wanted a system that operated in real time and integrated with its PeopleSoft Inc. supply-chain application, said Matthew Maguire, Domino's director of information technology.

But in Domino's lab tests, the PeopleSoft transactions were often delayed or even muscled off the network by more aggressive applications.

Maguire sought a tool that

would let him control application traffic proactively. When Packeteer this year added application response time management to its PacketShaper bandwidth manager, the bal-

Bandwidth Managers Ease Bottlenecks

Think of drawing a bath through a pipe the size of a drinking straw — it would sputter and dribble, and you would likely stay dirty for a while. Getting a big pool of messages from wide LAN pipes into narrow WAN pipes is no easier.

Router queuing helps the process by funneling the packets, but if traffic is very heavy, like torrents of water gushing and spilling through a funnel, it will overflow the buffer, and packets will be lost or delayed.

Adding WAN bandwidth is a pricey, temporary fix.

Domino's Pizza is solving the problem with a bandwidth manager that works by adjusting the taps. Rate-control techniques intercept the packets, check users'

access speed and network latency, then calculate what those values should be to let traffic flow smoothly and issue new instructions to the packets.

Packeteer's PacketShaper lets network administrators classify traffic types, set policies for rate control and reserve bandwidth for a particular traffic class or application.

Bandwidth managers can also eke out extra performance by using scraps of unused or excess bandwidth, such as the time between mouse clicks at a Web site. And if a traffic class uses up its guaranteed bandwidth, it can get first call on some or all of the excess bandwidth.

— Sami Lais

ance tipped in its favor.

Domino's looked at Visual UpTime from Visual Networks Inc. and WiseMan from Net-Reality Inc. "But Packeteer was the only one that could do the installation and make it work right out of the gate," Maguire said.

The PacketShaper 2000 is deployed on T1 lines used for Internet connections. PacketShaper 1000s are used to optimize traffic on the 128K bit/sec. access links that connect Domino's distribution centers to its wide-area network.

Dramatic Results

End users connecting with the six centers are already seeing a dramatic difference, Maguire said.

Workers at Hoechst Marion Roussel have had a similar experience with PacketShaper, said Tom Clark, information systems adviser at the Kansas City, Mo.-based pharmaceutical maker.

"We're just rolling out SAP R/3 worldwide, and we couldn't let it go out and get choked off the network," Clark said. PacketShapers have

brought application response times, which were between one and five seconds, down to a fraction of a second at all times, Clark said.

"I've looked at the network and seen it running at 98% of capacity, and no one knows," he said. "I didn't get one complaint."

And PacketShapers on a new WAN in South America eliminated the need to add several 64K bit/sec. lines that each would have cost \$10,000 per month, Clark said.

Three models of PacketShapers from the Cupertino, Calif.-based Packeteer handle traffic at T1, T3 and 384K bit/sec. rates. The prices range from \$3,450 to \$14,500. ▀

Correction

A story ["Internet 'Guardians' Can Simplify Security," Technology, page 69] incorrectly identified the company providing antivirus software in IBM's FirstSecure offering.

Symantec Corp.'s Norton Anti-Virus will be part of the package.

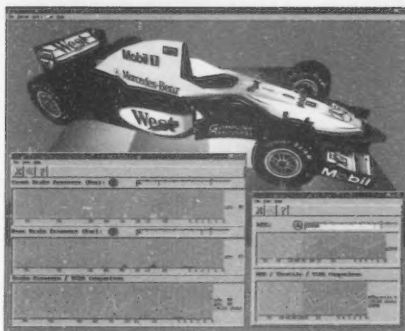
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BRIEFS

CA Buys Security Firm

Computer Associates International Inc. in Islandia, N.Y., last week said it has bought Security-7 Software Ltd. in Yotneam, Israel. Last year, CA integrated Security-7's SafeGate gateway-level security into its Inoculan product line.

Auto Parts Maker Signs With EDS

Electronic Data Systems Corp., in Plano, Texas, and Delphi Automotive Systems Corp., the Troy, Mich., auto parts maker spun off from General Motors Corp. last month, have signed two, five-year IT service contracts. The deals call for EDS to support Delphi's use of an automotive industry extranet, engineering and manufacturing systems for an undisclosed price.

Undersea Cable Probe

The U.S. Department of Justice last week confirmed it's investigating the undersea cable industry, which includes several of the world's largest telecommunications companies, for possible antitrust violations. *The Wall Street Journal* first reported that the probe is focused on a consortium of more than 30 companies working together to build a \$1.2 billion undersea cable between the U.S. and Japan.

Apache Now Nonprofit

Apache Group last week announced that it's now the Apache Software Foundation - a nonprofit umbrella corporation that will help shepherd the many open-source software projects contributing to Apache's evolution. Apache is an open-source Web server that's used, by some estimates, on about half of the world's Web sites.

IEEE Spec Approved

The Institute of Electrical and Electronics Engineers Inc. last week approved a specification for running Gigabit Ethernet over Category 5 twisted-pair as an international standard, opening the door for support of the 10 Gbit/sec. technology over a media other than fiber.

SAP Users Set to Test Supply-Chain Tools

Early projects to test software's stability

BY CRAIG STEDMAN

A crucial testing period is starting for SAP AG's supply-chain planning software.

Until last week, only two users had gone live with Advanced Planner and Optimizer (APO) since it was released late last year. But Eastman Chemical Co., a \$4.5 billion chemical maker in Kingsport, Tenn., is now running pieces of the software to plan inventory replenishment for customers.

Two more users - Mott's North America Inc. and a division of Litton Industries Inc. - are aiming to turn on parts of APO this month.

Beyond Back Office

The expanded usage is expected to finally begin providing a clear picture of the stability and functional maturity of APO, which is a key cog in SAP's effort to extend its reach beyond the back-office domain of R/3.

JUST THE FACTS

The Basics On APO

What it is: SAP's answer to supply-chain planning tools from vendors such as I2 Technologies Inc. and Manugistics Group Inc.; for use in preparing demand forecasts, production schedules and other plans.

Its status: Beta testing of APO started last fall, and the software was released at the end of last year. SAP says 130 customers have bought it, although only a few have gone live at this point.

What held users up: At first, APO couldn't send plans back to SAP's R/3 applications for execution. There also were problems with a memory cache that's supposed to boost performance.

But most users are starting small. For example, Eastman initially is working with one customer and using two of the four planning modules that make up APO.

At this early stage, APO "is looking pretty good," said

Craig Niermann, Eastman's technology team leader on the project. "I'm not going to say everything is smooth as ice. But data's flowing, and so far, so good."

But he added that Eastman hasn't delved deeply into APO's production planning module or fully tested its demand forecasting component.

APO's promised functionality is impressive, "but it's just a beta product right now," said Karen Peterson, an analyst at Gartner Group Inc. in Stamford, Conn. "It's still untested."

Colgate-Palmolive Co. is the only other U.S. user live with APO now. Like Eastman, the New York-based consumer products company is migrating its vendor-managed inventory program to APO. It's also shifting all internal product distribution planning in North America to the software - a process due to be wrapped up next week.

There have been "no major snags," said Jim Capraro, director of supply-chain systems at Colgate-Palmolive. "We keep

moving forward and bringing up plants and [more customers]."

But the company hasn't started using the demand forecasting or production planning modules yet, he added.

Mott's, a maker of juice and applesauce in Stamford, Conn., had hoped to start using APO in May [News, April 5]. But it was held up by bugs and functional issues that led the company to send a team to Germany to work directly with SAP's developers, said Tom Carey, a consultant at Grant Thornton LLC in Chicago. Grant Thornton is working with Mott's and Eastman on their APO projects.

Now Mott's is testing APO in parallel with its existing inventory replenishment system as a prelude to going live, Carey said. Mott's officials declined to comment.

"The product has been stabilized," said Mike Lipton, an APO marketing official at SAP. "It's fair to say there are still people out there who are waiting and seeing, but I think we're seeing signs of progress every day."

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Web Sites Battle Slow Download Times

Zona report claims sites may lose \$4.35B, need for speed critical

BY CAROL SLIWA

Zona Research Inc. last week claimed that an estimated \$4.35 billion per year in electronic-commerce sales may be at risk because of unacceptable Web-page download times.

Although the Redwood City, Calif., consultancy's figures and methodology can be debated, the report spotlights a problem that e-commerce sites acknowledge they continue to battle.

"In terms of a general trend, it doesn't matter that much whether it's \$2 billion or \$4 billion. What really matters is that the need for speed is criti-

cal to make money on the Web," said Zona analyst Jack Staff.

Sites have no control over many of the factors that affect download times, such as a visitor's computer processing power and Internet service provider connections.

Therefore, many companies try to design their pages with realistic expectations, balancing business needs for speed against striking visual features that may attract users, but also slow the site down.

Keep It Simple

CDnow Inc., one of the Web's most trafficked retailers, tries to keep its pages simple, with a "strong visual identity" but a limited number of the tables, colors and fonts that can cause a page to download slowly, said Michael Krupit, a

vice president at CDnow in Jenkintown, Pa.

When CDnow merged with N2K Inc., it inherited pages that carried a picture with each of an artist's albums. For an artist such as Frank Sinatra, that could mean hundreds of images on one page. CDnow compromised, showing the first five album covers and listing the rest of the albums.

To monitor its customers' download experience, CDnow hired Keynote Systems Inc. in San Mateo, Calif. Keynote samples download times in at least 35 cities around the country using different computers and Internet service providers. CDnow's average page-download time last week was 4.55 seconds, but a worst-case of nine seconds one afternoon served as a red alert for further investigation, Krupit said.

Some sites also set page size limits. Day-Timer Digital Inc., which offers its scheduling calendars online, tries to limit its site's footprint to 50K bytes per page, said Robert Humphrey, vice president of operations and development at Day-Timer, also in San Mateo.

Keeping a Log

Standard & Poor's takes daily snapshots of page generation time and size for its Personal Wealth site through log reports from its application server.

The company holds its most-visited pages to higher performance standards than less-visited ones, said Tom Gerhard, chief technologist at the company's consumer markets division in New York.

The division uses a 40K-byte target threshold per page. One way to achieve that is to use style sheets that automate the styling of text in table cells, Gerhard said.

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Extranet Services Target Health Care

Offerings promise to cut costs, but some users worry about security of sensitive data

BY BARB COLE-GOMOLSKI

A SPATE OF services designed to let health care practitioners communicate with patients and which will automate many now-manual procedures over a giant extranet is hitting the market.

For large health systems, that could mean dumping proprietary electronic data interchange systems and significantly cutting administrative costs.

Most of the services will charge health care providers a monthly fee, ranging from \$20 to \$40. That gives them a Web page, plus access to the network, which runs over secure portions of the Internet.

The services also sign up insurers and suppliers so doctors can use the network to verify the insurance coverage of a patient, for example. Doctors will have access to any provider with a Web browser but will pay for each service. So more

likely, they would subscribe to one — hopefully the same one as their trading partners.

WebMD Inc. (www.webmd.com) in Atlanta launched its service last fall and hopes to lure physicians to sign up by offering practice management tools and research. Comercis Inc. (www.comercis.com) in Southlake, Texas, this week will launch a similar service, initially targeting medical and dental professionals.

Medical Portal

Separately, two companies in Austin, Texas, @Outcome Inc. and Sulzer Orthopedics, last week announced plans to build a portal for use by Sulzer's orthopedic customers that will be based on @Outcome's patient communication software. And in September, Fort Lauderdale, Fla.-based ProxyMed — which is already processing transactions over its network for hundreds of insurance companies and thousands of pharmacies — will announce a front-end

component for physicians.

"This really cuts down on the paperwork," said Claudia LaBorde, an occupational therapist in Lafayette, La., who uses the Comercis network to collect referrals from doctors. In the past, patients hand-carried referrals, which resulted in "delays and lost referrals," she said.

"I am cheering for all these services to succeed wildly," said Kim Slocum, director of commercial development at AstraZeneca, a pharmaceutical firm in Wilmington, Del. If they do, AstraZeneca could use them to collect clinical information when it tests drugs. Doctors also could transmit prescriptions electronically, she said.

The biggest challenges for the services will be to convince doctors to sign up and to ensure that the services' networks are secure enough to handle sensitive medical information, Slocum said. ▀

Docs Online

Percentage of physicians on the Internet...

| | |
|------|-----|
| 1996 | 15% |
| 1997 | 50% |
| 1998 | 70% |
| 1999 | 85% |

...and what they're using it for

| | |
|---------------------------|-----|
| E-mail | 74% |
| Medical research | 60% |
| Communicate with patients | 33% |

*Based on interviews, research database of 10,000 physicians; multiple responses allowed

Home Depot Bolsters Site for Speed, Volume

Braces for 20 million hits per day this fall

BY DAVID ORENSTEIN

Even though it's still months away from selling products over the Web, The Home Depot Inc. last week unveiled a version of its Web site that's already designed to handle huge transaction volumes with subsecond response times.

The new version, akin to a home improvement portal, will gather data about customers and establish a relationship by sending how-to advice via e-mail. The company will begin

to sell products via the Web this fall [News, March 29].

Once the site is in full swing, the company said it expects as many as 20 million visits per day and 40,000 concurrent users, said CIO Ron Griffin. Subsecond response times are crucial to the site's success, he said, because its mission is to give customers the same sort of knowledgeable, speedy answers they would get from a store salesperson.

To achieve that goal, the

company has deployed a middle tier of 20 Hewlett-Packard Co. D390s servers running Version 10.2 of HP-UX. On the data layer, two K580 servers will host an Informix Corp. database, although the company may move to IBM's DB2.

Mike Anderson, vice president of information systems at Home Depot, said the site system employs full fail-over capabilities and redundancy for all hardware, including Cisco Systems Inc. switches.

The application server software is Broadvision Inc.'s One-to-One 4.0, designed to establish and manage relationships with online consumers by offering customizable content to each individual.

Griffin said the company plans to upgrade the site aggressively, calling the current setup "the frost on the tip of the iceberg."

Object-Oriented

When the addition of product sales requires the company to bolt the Web site to inventory and shipping systems, Griffin said it will rely on Java, the Common Object Request Broker Architecture and messaging middleware to make the integration successful.

"We do everything with objects already, anyway," Griffin said. For example, a store that needs more merchandise will be able to choose among several sources because the modular, information technology infrastructure can route the data among different distribution facilities within the company. ▀

Long-Haul Truckers Get Wired

Net hookups ease life on the road

BY STEWART DECK

The company that brought telephone and cable TV service to long-haul truckers has added Internet connectivity to its rest-stop offerings.

PNV.net (formerly Park 'N View Inc.) in Coral Springs, Fla., has added a \$10-per-month online service to its phone and cable hookup offerings at 220 U.S. truck stops. PNV also has exclusive contracts to install its parking spot hookups in more than 600 additional U.S. truck stops.

Internet hookup capabilities have been anticipated by truck

manufacturers such as Volvo Trucks North America Inc., which showed off an "Internet-ready" truck prototype at a trucking show in March in Louisville, Ky. Volvo, which garners approximately 12% of new truck sales, has just started shipping two truck models with built-in exterior connection ports.

"Our audience is the approximately 1 million U.S. long-haul truckers and their families at home," said Steve Conkling, president and chief operating officer at PNV.

A recent survey conducted by PNV concluded that 25% of long-haulers have a personal laptop or PC on board. Troy Snyder, a long-haul trucker at Casey, Ill.-based Larry Hickox



PROFESSIONAL TRUCKER RICHARD HUTSON uses a PNV.net hookup for in-cab telephone, cable TV and Internet access

Trucking has been an early tester of the PNV.net Internet connection and says it has become a vital part of his five-to-six-days-per-week life on the road. "I use it every day for getting in touch with family, look-

ing up directions — any number of things," Snyder said.

In September, PNV.net will unveil an online trucking portal Web site that will bring together industry news, e-mail and chat capabilities. ▀

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Clinton Expected to Sign Y2K Bill

Liability-limiting legislation will soon become reality, but some doubts remain

BY PATRICK THIBODEAU
WASHINGTON

CONGRESS approved legislation limiting companies' year 2000 liability last week, but the bill, which is expected to be signed by President Clinton this week, has triggered mixed reaction about its fairness and need.

The final version of the much-debated bill, the end result of several different measures, sets a 90-day cooling-off period before litigation can commence. It also limits, with some exceptions, a company's damages to its actual responsi-

bility — preventing plaintiffs from seeking damages from the company with the most money.

The bill also makes it harder for plaintiffs to launch a class-action lawsuit, among other things (see Sen. John McCain column, page 30).

The bill won bipartisan support and was backed by a large coalition of trade association groups. But doubts remain.

Stephen J. Humes, an attorney at Southern Connecticut Gas Co. in Bridgeport, said companies that have ignored the problem, expecting federal legislation to bail them out,

will benefit most from the bill. "Is that fair to those [other companies] that spent the money and invested the resources to be ahead of the curve?" Humes asked. "That's not a competitive business approach to the problem."

In any event, companies aren't going to rely on the courts for Y2K remedies, information technology professionals said.

Chris Apgar, year 2000 project manager at Providence Health Plan in Beaverton, Ore., which has 670,000 members, worried about the bill's impact on smaller companies — those without the vendor clout or resources of his company.

The bill gives some vendors "more breathing time to respond to problems, and this

doesn't help the small business out there," Apgar said.

But proponents say the bill doesn't replace a company's contract with a vendor, nor does it prevent a company

from taking legal action, said Marc Pearl, legal counsel for the Information Technology Association of America.

It does, however, require plaintiffs to do everything they can to mitigate damages and show that they developed a year 2000 action plan that included contingencies. ■

A Peek Inside the Liability Package

Key provisions of the year 2000 liability bill:

■ Before suing, a plaintiff must give 30 days' notice to a defendant. If the defendant responds with a plan to fix the problem, an additional 60 days is allowed.

■ The compromise bill preserves proportional liability. Companies will pay damages only for what they are responsible for. There is one exception, however: If the company being sued goes bankrupt and

can't pay damages, the liability of other companies in the action may increase. Companies that are shown to be "bad actors," for example, those that have lied about their product's year 2000 readiness, also may have to pay more.

■ To join a class-action lawsuit, a plaintiff must show it suffered some harm.

■ The bill applies only to year 2000 failures that occur before Jan. 1, 2003. — Patrick Thibodeau

Caldera Scores Points in Suit

Caldera Systems Inc. claimed a preliminary victory last week in its own antitrust battle with Microsoft Corp., when a U.S. District Court rejected three motions filed by Microsoft seeking to dismiss portions of the case, Caldera officials said.

The rulings brought the parties a step closer to a trial slated to start Jan. 17 in Salt Lake City.

Caldera's lawsuit, filed in 1996, alleges that Microsoft used its monopoly power in the desktop operating system market to crush the DR-DOS operating system, which Microsoft viewed as a competitor to its MS-DOS.

In February, Microsoft filed nine motions, which asked the court to dismiss portions of Caldera's lawsuit before the case comes to trial.

The court issued a written order denying three of Microsoft's motions that had been argued previously, said Bryan Sparks, president and CEO of Orem, Utah-based Caldera.

Microsoft spokesman Jim Cullinan said the company was disappointed in last week's ruling but added, "We believe we have shown that Caldera does not have enough evidence to support any of its claims."

—IDG News Service

Windows Reigns as Antitrust Trial Winds Down

Users say trial had little impact on IT planning; some wonder if it ever will

BY PATRICK THIBODEAU
WASHINGTON

For Michael Smith, an information systems director at Upsher-Smith Laboratories Inc., the Microsoft Corp. antitrust trial has already accomplished something. He said he got curious about the Linux operating system and took a peek at it.

But that's about as far as he will go with Linux, said Smith, whose Plymouth, Minn.-based employer makes generic pharmaceuticals. He already supports Windows 3.1, 95 and NT and said he isn't eager to add another operating system. "I could not imagine a world more complicated than the one I'm in right now," he said.

Smith isn't alone. For most users, the nine-month trial, at which testimony ended last month, has had little impact on their worlds. Windows still rules. For now, most users don't see Linux — or any other desktop alternative — as a serious competitor to Microsoft.

In defending itself against the charge of being a monopoly, Microsoft constantly pointed to the existence of rival network computers, Internet ap-

pliances and operating platforms — especially Linux.

"I think we're open to alternatives," said Joe Sendrowski, IS director at RF Monolithics Inc., a Dallas-based radio component maker. But the ques-

tion for him is the availability of Microsoft's Office suite on alternative platforms. "Excel is the most heavily used application we've got," he said.

The Office applications are Microsoft's "ace in the hole, preventing people from bailing out of a Windows environment, for a while anyway," Sendrowski said.

By interlocking its applications, tools and operating systems, "Microsoft carefully built a fortress surrounding itself," said Dan Kusnetzky, an analyst at International Data Corp. (IDC) in Framingham, Mass. Its shares of the operating system and office suite markets are near 90%, according to IDC.

Even if users weren't convinced by the proceedings that desktop alternatives exist, some vendors loved the attention.

JUST THE FACTS

What's Left At the Trial

Aug. 10: Microsoft and the government present "findings of facts" — detailed summaries of their respective cases

Sept. 21: Closing arguments begin

Late 1999 to early 2000: Verdict from Judge Thomas Penfield Jackson

FAA All Done With Y2K Work

BY PATRICK THIBODEAU
WASHINGTON

The U.S. Federal Aviation Administration said it met its self-imposed deadline Thursday on its year 2000 work, completing repairs and testing of its 65 air-traffic control systems.

But some airlines came in

just short of meeting the same June 30 deadline, according to the Air Transport Association in Washington.

The trade association said 95% of the 108 passenger and cargo airlines it surveyed — representing nearly all of the carriers in the U.S. and Canada

"We couldn't pay for the advertising" the trial produced, said Lonn Johnston, a vice president at Brisbane, Calif.-based Pacific Hightech Inc., which makes Linux software products aimed at the server market. But in a *Computerworld* survey (News, May 10), users said that if Microsoft loses, their preferred remedy would be that PC makers be freed to put whatever software they want on their systems.

Even a strong court remedy won't affect Microsoft's grasp, said Danny Edwards, programming manager at Hunter Industries Inc., in San Marcos, Calif. It won't matter what operating systems PC makers offer because "you can't get Word for Linux," he said. ■

MOREONLINE

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— had completed remediation efforts on critical systems, said spokeswoman Sophie Bethune. All airlines expect to complete Y2K repairs by summer's end, she said. The group declined to release information about specific airlines.

The FAA's year 2000 work is being reviewed by the agency's inspector general, an independent contractor and the U.S. General Accounting Office. ■

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BRIEFS

Cisco Spends \$435M
For Chip Specialist

Cisco Systems Inc. has acquired semiconductor developer StratumOne Communications Inc. for about \$435 million. Cisco aims to use StratumOne's technology to speed up switches used by carriers. The firms have developed technology to transport data at 10G byte/sec. for operators of public networks.

Clinton Eases Exports

President Bill Clinton last week announced a plan to let U.S. companies export faster computers and semiconductors to countries that have trade restrictions for national security reasons. U.S. computer makers called the plan "a good first step" but urged the government to work around a six-month waiting period. The change will require congressional approval.

Feds' ERP Use on Rise

Federal Sources Inc., a market researcher in McLean, Va., predicts that annual spending on new enterprise resource planning (ERP) systems by the federal government will rise to \$3.7 billion by 2003. That would be a 32% increase from the \$2.8 billion spent last year, it said.

Short Takes

SAP AG's venture-capital unit last week said it's making an unspecified equity investment in MARKET-FIRST SOFTWARE INC., a Mountain View, Calif., developer of Internet-based marketing software. . . . GREAT PLAINS SOFTWARE INC. in Fargo, N.D., reported a \$4.4 million profit for its fourth fiscal quarter ended May 31. That compares with a year-earlier loss of \$1.6 million. . . . VIA TECHNOLOGIES INC. has signed a letter of intent to buy NATIONAL SEMICONDUCTOR CORP.'s Cyrix x86 microprocessor business for an undisclosed sum. Via said it will continue to develop the Cyrix product line and will release more details next month. . . . CYBER-CASH INC., a maker of electronic payment software, plans to acquire San Jose-based TELLAN SOFTWARE INC., which produces payment processing software. Terms weren't disclosed.

Microsoft, Intel Woo
Workstation Users

NT savings cited; migration still a hurdle

BY MATT HAMBLIN
BURLINGAME, CALIF.

MICROSOFT CORP. and Intel Corp. officials last week trotted out several examples of large businesses — such as Xerox Corp. and Pratt & Whitney — that have moved from Unix to the Windows NT operating system.

At the Workstation Leadership Forum sponsored by the two desktop giants here last week, the vendors also touted a new report from International Data Corp. in Framingham, Mass., that predicts that worldwide revenue for NT will exceed revenue for Unix some time next year for the first time (see chart).

The NT Push

The event's purpose was largely to market to large businesses, and the message from Microsoft and Intel was clearly that an NT migration should be in their future because of claims that it is cheaper than Unix and can match Unix performance.

Analysts say cost savings

from using NT are significant, with up-front hardware half the cost of some Unix workstations and support costs of up to 30% less.

But users, analysts and even Microsoft agreed the move can be tough.

Korhan Sevenler, manager of engineering systems at Xerox in Webster, N.Y., said Xerox de-

signers recently began using 330 Wintel workstations on NT. But even though Sevenler said he is committed to NT and likes the ability to combine engineering and office applications on a single platform, he described interoperability between Unix and NT as "too cumbersome."

The transition required more training for his systems staff than expected, he added.

Because of that difficulty,

BankBoston Traders Like NT

At BankBoston Corp. in Boston, one financial trader couldn't believe his new Windows NT-based workstation was working because he didn't see an hourglass icon on his screen during calculations.

But the calculations were taking place. The trader expected to see the icon he was accustomed to seeing on his old Unix-based workstation, which had worked more slowly, Hemant Kurande, vice president of trading-floor technology at the bank, said in an interview last week.

In the past six months, the bank has switched 300 traders' Unix workstations to NT.

Traders have "loved the move,"

which increased productivity and eased user confusion, Kurande said. Before, each trader had four desktop machines; now each has five monitors for tracking money exchanges and other worldwide trading markets.

BankBoston's transition was one of several touted by Microsoft Corp. and Intel Corp. at the Workstation Leadership Forum in Burlingame, Calif., last week.

Kurande said that even with NT, the bank will never give up Unix entirely for its large database and data-processing complexity as well as its valuable management applications.

— Matt Hamblin

Dell Lays Plans for Life Beyond the Desktop

Company quietly reorganized development team to look into new industry drivers

BY STACY COLLETT

Michael Dell is adamant that the PC market has a bright future. But unobtrusively, Dell Computer Corp. is laying the groundwork for new ventures that will take the \$20 billion company beyond the desktop.

Four months ago, Dell quietly consolidated its engineering efforts in the OptiPlex and Dimension PC areas to look at technologies that are driving the industry. The company's peripheral, platform and software groups are looking into

storage, LCDs, chip sets and graphics, according to Dell spokesman John Thompson.

"You can start thinking about form and function areas" now that base performances of PCs are solid, Thompson said. For example, all-in-one PCs, one of Dell's new development areas, will combine large LCD displays with a lightweight computer.

On other fronts, CEO Dell last month said his company will start its own Internet service provider in the U.S. but

provided few details. The company also said it's getting into the online auction business. And in the next few months, Dell plans to unveil new electronic services, according to Thompson.

Perceived Wisdom

Some industry observers said Dell is wisely responding to shrinking profit margins throughout the industry and predictions of slowing PC sales.

The \$170 billion PC industry "is doing well, but it's a cyclical business. At some point it will slow," said Wendy Abramowitz, an analyst at Argus Research Corp. in New York. Dell

JUST THE FACTS
Windows NT
vs. Unix

■ NT units shipped doubled from 1996 to 1999.

■ NT global revenue will hit \$6.19 billion in 2000, compared with Unix revenue of \$6.07 billion

■ Annual growth for NT through 2003 will be 20%

■ Annual growth for Unix through 2003 will be negative 5%

SOURCE: INTERNATIONAL DATA CORP.
FRAMINGHAM, MASS.

Microsoft Chairman Bill Gates assured users in a keynote that Microsoft would write software and support third-party tools to help users migrate gradually.

Gates said Microsoft will continue to support NT Services for Unix, known as SFU, a software tool that allows users of NT workstations to access files on Unix systems and lets Unix users access resources in NT Server. And Microsoft is licensing Network File System software from Intergraph Corp., which builds interoperability software.

Daniel Minior, manager of applications at Pratt & Whitney in East Hartford, Conn., said the jet-engine maker is moving slowly to NT to replace some of its 4,000 Unix workstations. A pilot program has been successful in letting 30 engineers adjust 3-D drawings of engines and do virtual tours inside them, he said. ■

is already seeing its stock price slump — to \$37 per share on June 30, down 33% from its \$55 high in February.

Other industry watchers said the Round Rock, Texas-based company's phenomenal growth rate won't subside any time soon.

"There's a lot of PC growth left. The new devices will tend to be 'in-additions-to' as opposed to 'instead-of PCs,'" said Roger Kay, an analyst at International Data Corp. (IDC) in Framingham, Mass.

IDC reports that Dell's unit shipments for U.S. small and midsize businesses grew 53% in this year's first quarter, nearly five times the industry growth rate. Dell now has 20% of the U.S. PC market, second only to Compaq Computer Corp. ■

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Continued from page 1

Windows Licensing

simplify licensing within the next six months, said Peter Boit, vice president of worldwide licensing.

"We are absolutely aware of customers wanting greater simplicity and consistency" in licensing, Boit said.

A *Computerworld* survey of 103 corporate IT managers found that more than three quarters want Microsoft to reform its licensing policies (see chart, page 1). A majority of them compare Microsoft's complexity and pricing unfavorably with that of other vendors of comparable products (see chart at right).

Contributing to the complexity is that the company, once focused on clients, now offers server products that nevertheless often carry client access charges, analysts said. Users, while not necessarily against client-side licenses, aren't willing to pay for every user in their organization in addition to paying for every server the software runs on.

In the survey, 44% said they prefer client-side licensing but want to pay only for a set number of concurrent users, rather than a per-user charge for everyone in the company. Another 40% said they would prefer to have one license per product that covers the server and all users. Only 6% of users said they favored licenses that charge for every user.

Such usage rights are a particularly difficult problem with Microsoft licenses, said Gartner Group Inc. analyst Alexa Bona. The software maker has long kept and frequently exercises the right to unilaterally change usage rights that govern how a customer can use the software.

The changes often cause costs to increase, even as the price ostensibly stays the same, said the London-based analyst. In the past, Bona said, Microsoft has increased costs as its market share has grown. Office licenses used to include home use, she said, but now they don't.

Boit said Microsoft changes its licensing terms to adjust to

License Renewal

Users don't consider Microsoft's licensing policies to be unfair, but they want changes.

Do you think Microsoft's licensing and pricing terms are fair?

| | |
|------------|-----|
| Yes | 55% |
| No | 37% |
| Don't know | 3% |

How does Microsoft's policy compare with other vendors?

| | |
|----------------|-----|
| More difficult | 53% |
| Same | 41% |
| Less difficult | 6% |

How does Microsoft's licensing prices compare with other vendors?

| | |
|--------|-----|
| Higher | 50% |
| Same | 36% |
| Lower | 7% |

Source: Survey of 103 IT managers who use Windows NT Server

how people use software, not to extract more money.

Yet, in the *Computerworld* survey, 48% of those polled said their per-user costs have risen in the past year, and 71% of them said the increase was the result of changes in the licensing model. Users able to estimate the amount of the increase gave numbers ranging from a few percentage points to as much as 500%.

At gum giant Wm. Wrigley Jr. Co. in Chicago, Microsoft products are beginning to make inroads, but licensing has struck the company as somewhat confusing and expensive. A decision to adopt Windows 2000 will be based at least in part on costs, said audit supervisor Jerry Kristoff.

Home Shopping Network Inc. in St. Petersburg, Fla., is satisfied with the terms it negotiated, said CIO David Aldridge. But he said the progress the company can make is ultimately limited by the lack of real choice in the market for many of Microsoft's products. The act of negotiating with Microsoft, therefore, is constrained by their leverage. "You negotiate, but [negotiate] is kind of in quotation marks," he said. ■

MOREONLINE

For resources related to Windows 2000 and software licensing, visit our Web site. www.computerworld.com/more

Crackers Used Known Weakness on Fed Sites

Lessons learned: Spot holes, patch quickly

BY ANN HARRISON AND KATHLEEN OHLSON

COMPUTER SECURITY analysts said crackers who broke into three federal Web sites last week exploited well-known security holes for which patches were previously available.

The break-ins occurred at Web sites run by the U.S. Army, NASA and the National Oceanic and Atmospheric Administration (NOAA).

Eric Schetina, chief technology officer at IFsec, a security consulting firm in New York, said that although few people were affected by the attacks, consumer confidence in online

services was hurt.

E-commerce sites can learn from the government attacks by keeping up with the latest exploits and rapidly installing patches, said Jacob Carlson, an IFsec consultant.

Pentagon spokesman Jim Stueve said the attack on the Army site defaced the home page but didn't compromise military data. Stueve said officials don't know how intruders gained access, but they are investigating the site's ColdFusion software from Allaire Corp. in Cambridge, Mass.

Earlier this year, Allaire issued bulletins warning that some sample files shipped with ColdFusion let attackers modify files or get programs to

run on a Web server.

Weld Pond, a security analyst at L0pht Heavy Industries, a group of security consultants in Boston, said he warned the Army webmaster two months ago that the server was vulnerable. Pond said the Army fixed the problem on one machine, www2.army.mil, but failed to fix other machines in the cluster that was attacked.

Carlson said a group of crackers named Global Hell, who have been pursued by the FBI, claimed responsibility for the Army hack. He said the NASA site was compromised by another Global Hell member using a 2-year-old exploit of Sendmail 8.6. It's unclear what exploit knocked over the NOAA site, but it was also a relatively unsophisticated attack, Carlson said. ■

HP Net Push Forces Interex User Group to Expand Focus

Pace of technology overwhelms some groups

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co.'s frantic Internet push is forcing its hardware-oriented Interex user group to transform itself — or risk losing the HP funds that have sustained it for so long.

After 25 years of providing a forum mainly for users of HP's Unix and HP 3000 hardware platforms, Interex is being forced to recast itself as an organization with broader interests, ranging from enterprise resource planning (ERP) applications to the Linux operating system.

When the group gathers for its annual meeting in mid-August in San Francisco, the event will feature several new programs like ERP World '99, an E-Services Summit, an Internet Application Service Provider Forum and a Linux Summit.

"The Interex/HP relation-

ship is undergoing change, in large part because of HP's decision to shift its focus away from hardware-only sales," said Rick Saunders, chairman of Interex. Interex has adopted "a broader mission" that also embraces Internet IT professionals, he said.

Funding Gets Redirected

One senior Interex member, who requested anonymity, said much of the co-marketing funds that HP used to give to third-party vendors supporting its hardware products are being rechanneled to its new Internet partners.

So hardware partners that bought exhibitor space or sponsored events at past Interex shows may no longer have HP's co-marketing dollars to participate, the source said. Even so, HP World '99 will have more vendors exhibiting and participating than ever be-

fore because of HP's broader focus, Saunders said.

An HP spokeswoman said it was accurate that the company's relationship with Interex was changing as a result of HP's Internet focus but refused to comment further.

The changes at Interex come at a time when other longstanding groups are also transforming themselves. The Digital Equipment Computer User Society (DECUS) and International Tandem User Group are considering a merger [News, May 31].

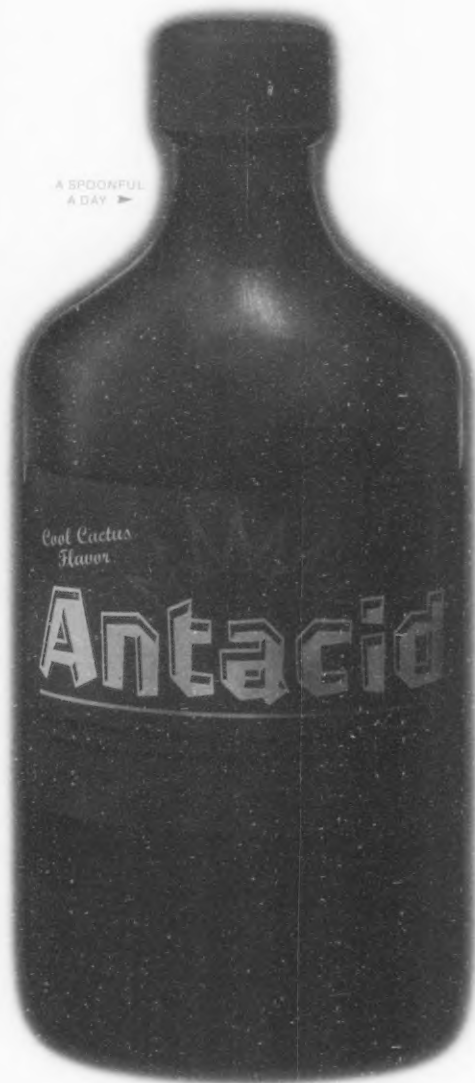
"The pace of technology change is beginning to overwhelm the user groups' ability to keep up with it," said Jeff Killeen, a member of the DECUS board of directors. Compaq Computer Corp.'s Internet push, for instance, "will require a complete refocusing of what we offer" over the next two years, he said.

Dwindling membership pushed Guide International Inc. — an influential mainframe user group — to reorganize itself last year. The group will now focus on IT management issues, like Internet-enabling legacy applications, said Ron Higgins, Guide International's president. ■

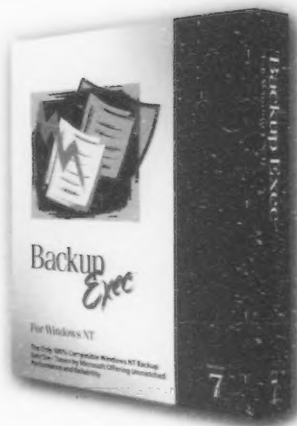
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- Enable team members to be automatically notified by e-mail about project changes

AltaVista Stake Sold To CMGI for \$2.3B

Compaq cedes control of 'Internet gem'; CMGI plans ties to other Web investments

BY STEWART DECK

COMPAQ'S DEAL last week to transfer majority ownership of the AltaVista.com search engine to CMGI Inc. should benefit the parties involved, but some observers say Compaq gave up a real Internet asset.

CMGI, an Andover, Mass.-based investment firm with annual revenue topping \$100 million, helps develop and operate Internet and direct marketing companies. Its \$2.3 billion purchase gives it an 83% majority stake in the AltaVista enterprise.

Former owner Compaq Computer Corp. will own the remaining portion while gaining a seat on CMGI's board

of directors and a 16% stake in CMGI.

The two companies said they will also collaborate on unspecified Internet research and technology that will be one of the cornerstones to Compaq's future online direct sales efforts.

And CMGI CEO Dave Wetherell said AltaVista would use Compaq's technology and CMGI's Internet sites to appeal to both consumers and business users.

Among CMGI's holdings is a 20% share of search portal Lycos Inc. Before the AltaVista purchase, CMGI was facing potential tax classification and government regulation as a

mutual-fund company because of its widespread investments. But a majority stake in AltaVista removes that problem.

Several analysts considered AltaVista a true Internet gem, but site development had begun to languish behind rivals' — such as Yahoo Inc. and

way requires a set of skills Compaq doesn't seem to possess," said James Meyer, an analyst at Janney Montgomery Scott Inc., a Philadelphia investment firm. "The people who successfully run [Internet] businesses don't come out of the traditional Compaq-type world."

But Art Russell, an analyst at Edward Jones & Co., a St. Louis investment firm, said AltaVista can still be a vital part of Compaq's online sales, customer service and Internet branding efforts by promoting Compaq links and after-sales services.

The sale came just as AltaVista unveiled more than 20 new Web site features. The site now includes multimedia search capabilities, a "freshness guarantee" for search results and a minisearch tool that lets users check stock quotes and other news tidbits without clicking outside the page.

After almost a week of takeover talks with CMGI, Rod Schrock, AltaVista's CEO, said that the Compaq deal will provide AltaVista with a clearer future. ■



ROD SCHROCK, AltaVista's CEO, sees a clearer future in a CMGI's partnership with Compaq

Go.com — moves into the online portal realm.

"To run AltaVista the right

Manugistics' CEO Focuses On Future

Two weeks ago, struggling Manugistics Group Inc. broke a string of four straight quarterly losses by reporting a slim \$389,000 profit for its first fiscal quarter ended May 31.

Last week, new CEO Gregory Owens, 39, who was hired away from Andersen Consulting in late April, spoke with *Computerworld* senior editor Craig Stedman about his plans for the Rockville, Md.-based vendor of supply-chain planning software.

Q: Do you expect to stay profitable?

A: We need to be a profitable company. The second-quarter [sales] pipeline looks significantly better than it did in the first quarter... but I'm not at the point that I can guarantee it. It's too early in my tenure to go out on a limb like that.

Q: What does Manugistics need to do better?

A: I've reprioritized what we're spending on in research and development [to focus on things such as collaborative planning]... And our sales and marketing organization wasn't world-class. We'd been working on the [collaborative planning tools] for 18 months, and nobody knew about them.

Q: Does Manugistics plan to revisit its earlier search for a buyer?

A: I'm not in this for the short term. If I was, I'd maximize profits, dress it up and go to sell it. But I think this is best positioned as a stand-alone company.

Q: Are any more layoffs likely beyond the cuts made before you were hired?

A: We will make no further reductions. We have over 50 positions we're trying to [fill]. ■



OWENS: "best as a stand-alone company"

IBM Reportedly in Talks to Acquire Sequent

Other option: IBM could license key server technology

BY JAIKUMAR VIJAYAN AND STACY COLLETT

IBM could accelerate its move to the market for highly scalable Intel Corp. servers by acquiring hardware maker Sequent Computer Systems Inc.

But there's little reason for IBM to buy Sequent outright to do that, even with rumors of merger talks last week, analysts said.

Instead, IBM could achieve the same result by simply licensing and reselling such technology under a manufacturing agreement with Beaverbrook, Ore.-based Sequent, analysts said.

"Sequent doesn't have a problem [licensing] its technology to other manufactur-

ers," said Rich Partridge, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. "So I'm not sure why IBM would think the only way to get the technology is to buy Sequent."

Sequent refused to comment on acquisition talks reported in *The Wall Street Journal*. IBM didn't return calls.

Server Market

But if such an acquisition is in the works, it's probably being driven by IBM's bid to position itself better in a still-emerging market for very large commercial Intel Corp. servers running Unix, Partridge said. The overall market for such high-end servers at \$2.7 billion, according to International Data Corp. in Framingham, Mass., is still relatively small.

The \$784 million Sequent has carved a high-end niche for itself by building large servers — its highest-end system supports 256 processors — with

relatively inexpensive Intel hardware.

Sequent was among the first to announce symmetrical multiprocessing servers back in 1984 and was later among the first to announce servers based



I'm not sure why IBM would think the only way to get the technology is to buy Sequent.

RICH PARTRIDGE,
ANALYST,

D. H. BROWN ASSOCIATES INC.

on the even more scalable Non-Uniform Memory Access architectures. But the lack of widespread support for its Dynix PTX operating system has hurt its ability to compete in the Unix market.

The Sequent systems, particularly when IA-64 systems start shipping, would give IBM a ready-made high-end Intel platform for running its 64-bit Monterey Unix version when that becomes available by early next year.

Working With IBM

Monterey, which is being developed for Intel's IA-64 architecture, merges IBM's AIX Unix with The Santa Cruz Operation Inc.'s UnixWare and Sequent's Dynix.

"With systems the size of what Sequent's selling, you would expect [end users] are large manufacturers, people running data mines and other high-end applications," said Jim Williamson, an analyst at IDC. "But I doubt it's anyone IBM hasn't worked with at one time or another." ■

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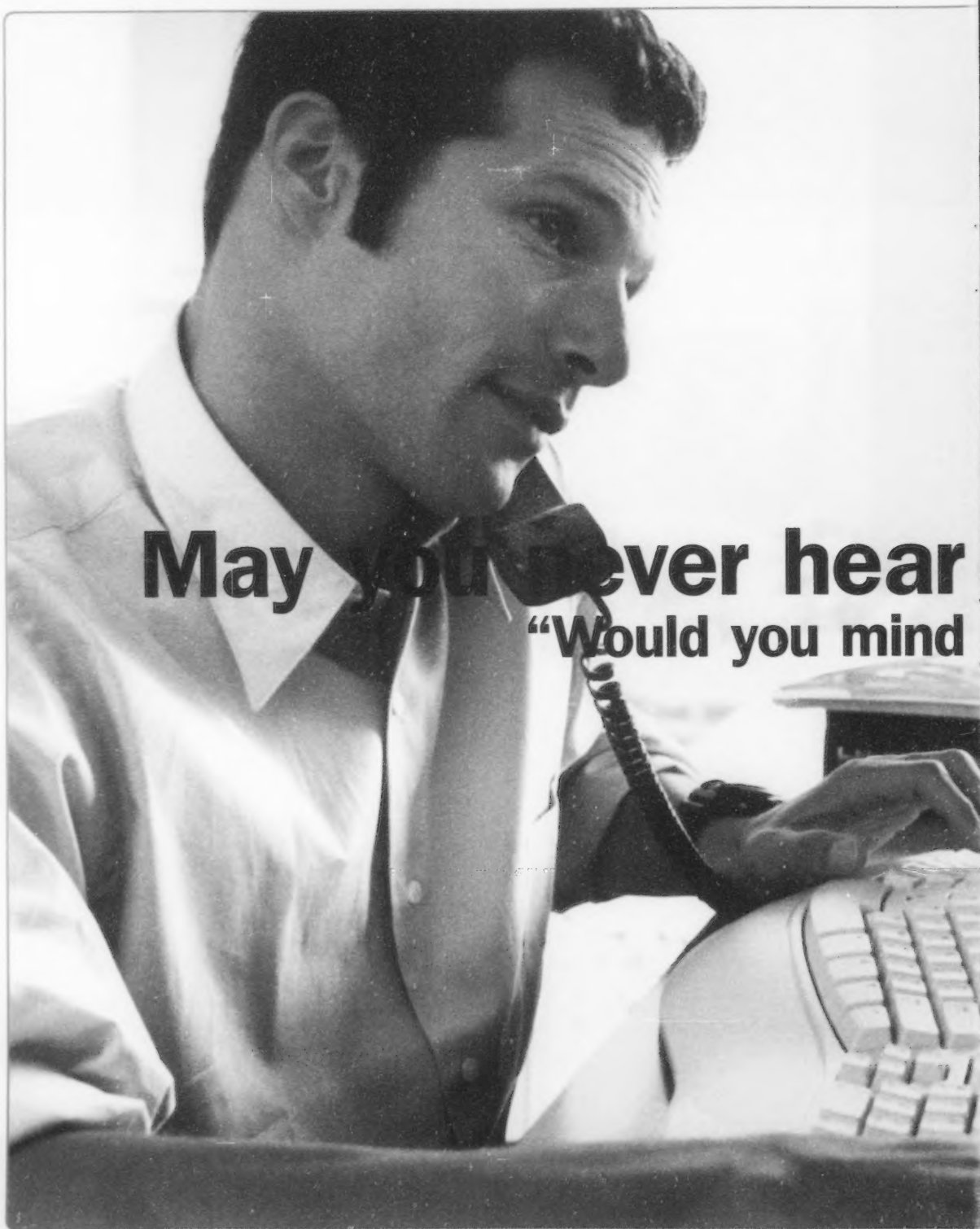
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Net Managers Battle Online Trading Boom

Employee productivity takes a hit from lengthy visits to Web stock trading sites

BY STACY COLLETT

PORNOGRAPHY, check. Online auctions, check. Sports sites, check. MIS director Jeff LePage thought his company's network was insulated from the Internet sites that typically lure employees away from their work.

Those activities are policed and in some cases blocked with monitoring software because the company policy at American Fast Freight Inc. in Seattle clearly states that any online activity "not specifically and exclusively work related" is prohibited.

So imagine LePage's surprise when a new culprit emerged: He recently discovered that one employee had visited a stock-monitoring Web site 186 times during a 12-day period. "We've been bitten" by the online investing bug, LePage said. He isn't alone.

According to a study by SurfWatch Software, a division of Spyglass Inc. in Los Gatos, Calif., investment sites are now second only to general news as the Web addresses most visited by people at work — knocking out the pornography, entertainment and sports sites that dominated the first quarter of 1998.

The stock market boom and the day-trading frenzy at Web sites such as ETrade.com and Schwab.com have created a form of recreational surfing that hits employers especially hard. The best time to trade is during business hours, and that means greater demands on a company's network bandwidth and resources, as well as substantial productivity hit.

The amount of time that at-work visitors spent on the top 10 financial Web sites increased nearly 60% on average from December 1998 to March 1999, according to Media Metrix Inc., a New York company that monitors Internet

traffic. For instance, at-work Internet users spent an average of 4.4 hours during the month of March at an investment hub called Stocks.com — a 166% increase since December, the report said.

Yet few companies have written Internet usage policies that specifically prohibit online investing.

A Computerworld survey of 102 network administrators found that 55% noticed employees trading stocks or visiting investment sites during work hours. Only 40% of the

dealing with more and more," said David Kroening, assistant director of technology and operations.

The firm uses software from Kirkland, Wash.-based Content Technologies Inc., which scans Web pages and blocks employees from opening executable files. That means employees can check out the price of a stock but can't place an order. "They're probably just turning around and picking up the phone" to make a trade, Kroening acknowledged.

But employees increasingly are demanding access to now-blocked sites for business purposes, he said. When that Internet floodgate opens, online trading will increase, and so

will Kroening's monitoring.

Some online investment activity occurs under the radar of even vigilant network managers, because seemingly innocuous Web sites such as MyYahoo.com let users set up customized stock news and portfolio tracking pages. "They require a cookie to see what an individual is

line investing to some acceptable level than to try to stamp it out entirely.

Cellular One in San Francisco, which has had episodes of employees visiting investment sites, developed a rule of thumb for determining how much is too much. An employee spending 30 to 40 minutes per day on recreational browsing will probably show up on a list of Internet abusers, said Eric Fermon, senior information network specialist. The company can then choose to cut off an employee's access to the Internet.

The company uses SurfWatch software that can be set to allow visits to stock sites only during lunchtime and outside normal office hours, Fermon said, "but we haven't tuned it to that pitch yet."

Pull Out the Policy

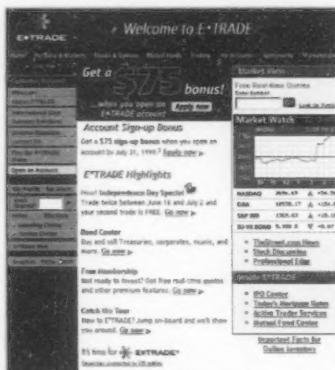
Even companies with an Internet usage policy may not have updated it to cover the surge in online stock trading.

At electronics company Hella North America Inc. in Flora, Ill., online trading is starting to show up on network logs. "There have been instances where people spend up to two hours in one setting doing stuff like this," said Dustin Hackney, network administrator. Hella's Internet policy states that browsers should be used only for business purposes and only during business hours, but it doesn't specifically prohibit online investing.

Experts said it's time for companies to drag out their Internet policy and specifically include a limit on personal investment activity. "If there's not a policy, there's going to be an argument," said Peter Kershaw, president of Content Technologies.

Since the online trading incident at American Fast Freight, the company has amended its Internet usage policy to specifically prohibit use of online investing sites during work hours — except for lunchtime.

"In all honesty, no one said on the front end that he was not supposed to do this," LePage said, referring to the employee who went on a 12-day stock-watching binge. "And you can't really penalize someone for that if they don't know. But a level of common sense would dictate this probably isn't appropriate." ■



THE ONLINE TRADING CRAZE is jacking up the frequency and length of visits to sites such as ETrade, and that's cutting into productivity, employers say

Who Pays?

Online investing is a special problem for companies that bill clients by the hour, such as the law firm Epstein, Becker & Green PC in New York. Employees may be spending hours trading stocks and charging that time to a client. "It's something that we'll be

doing," LePage said. "You would even have to do a spot check on the person's computer to see what the activity actually is."

Kroening said there isn't much he can do to monitor those "personal pages," but if he notices someone generally using the Web a lot, he will notify the employee's manager. "It's more of a personnel issue now" than a technical one, he said.

Unlike online pornography, employee stock trading doesn't put the company in jeopardy for lawsuits. So companies are more likely to try to limit on-

Surf's Up At Investing Sites

Companies ban online porn, but investing is more common.

Most frequent recreational surfing by employees:

- 1 Sports
- 2 Stock trading
- 3 Job hunting
- 4 Pornography

Base: Survey of 102 network administrators at companies with 500 or more employees. SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

Online activities specifically discouraged by corporate policies:

| CATEGORY | RESPONDENTS |
|---------------|-------------|
| Pornography | 79 |
| Gambling | 51 |
| Chat | 37 |
| Shopping | 27 |
| Sports | 25 |
| Stock trading | 24 |
| Job hunting | 23 |

Base: 90 network administrators, multiple responses allowed. SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

Where employees are going:

FINANCIAL INTERNET SITES MOST VISITED BY PEOPLE AT WORK (MARCH 1999)

- 1 Yahoo Finance
- 2 Quicken Financial Network
- 3 AOL Personal Finance
- 4 MSN's Money Central
- 5 CBS Marketwatch
- 6 CNNfn.com
- 7 ETrade
- 8 The Wall Street Journal
- 9 Bloomberg.com
- 10 Fool.com

SOURCE: MEDIA METRIX INC., NEW YORK

"Stickiest" financial sites:

| AVERAGE MINUTES SPENT BY AT-WORK VISITORS (MARCH 1999) | |
|--|-------|
| Stocksite.com | 266.8 |
| Ragingbull.com | 182.4 |
| Thomsoninvest.net | 94.4 |

SOURCE: MEDIA METRIX INC., NEW YORK

Web Service Targets Shoppers at Checkout

BY DAVID ORENSTEIN

A new set of Web-based services from Sunnyvale, Calif.-based @pos.com Inc. would give retailers the ability to advertise to customers shopping at stores and gather data about them while they wait in line. But some retailers said they would rather not outsource those services.

Along with several partners, @pos.com plans to deliver Web-based content such as surveys and advertisements directly to its terminals at the checkout counter, said @pos.com CEO Aziz Valliani. The surveys would gather customer feedback and data for the retailer, and the advertisements would target the individual shopper based on personal data.

Another Web-based service, ReceiptCity.com, would store receipts and electronically captured signatures online for shoppers and retailers who would rather not store papers on their own. The site would also facilitate returns.

A Powerful Weapon

Analyst Donald Bellomy at Aberdeen Group Inc. in Boston said combining online content such as ads and surveys with in-store customer service is a powerful weapon for retailers competing with Internet-only merchants.

Cincinnati-based Federated Department Stores Inc. is completing the deployment of more than 30,000 terminals from @pos.com and is enthusiastic about the concept of engaging shoppers in the checkout line, said Steve Stockett, senior vice president of store systems.

But the retailer would rather manage the content in-house than cede control to outside sources who may not be able to tailor it as well, Stockett said.

Federated already keeps electronic copies of receipts, he added.

Trouble Spots

Using the terminals, which are earlier versions than the ones @pos.com will sell with its services, Federated has experimented with delivering content to customers at the checkout stand and found a few problems that need to be ironed out, Stockett said.

The content presentation must be completed before the average transaction of about 60 seconds goes by or it will

slow down the line.

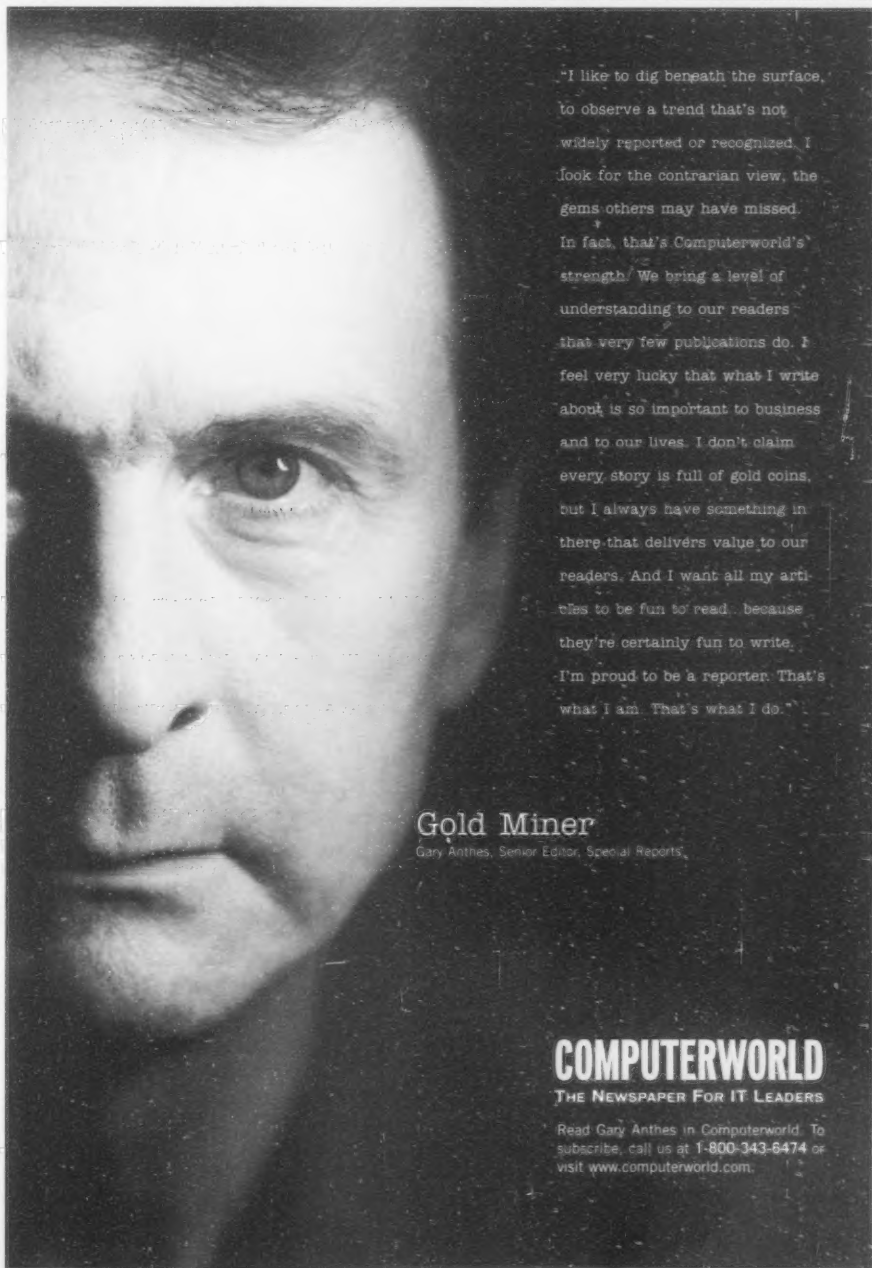
Another problem that clerks have had trouble solving is the fact that customers often don't

approach a sales kiosk where the terminals are located.

But at Filene's Basement, a Wellesley, Mass.-based discount clothier, the idea of receiving advertising developed by @pos.com and its partners

would save time and resources, said CIO John King.

"Our core competence is off-price retailing," King said. "We shouldn't be developing point-of-sale systems. We should rely on other people." ■



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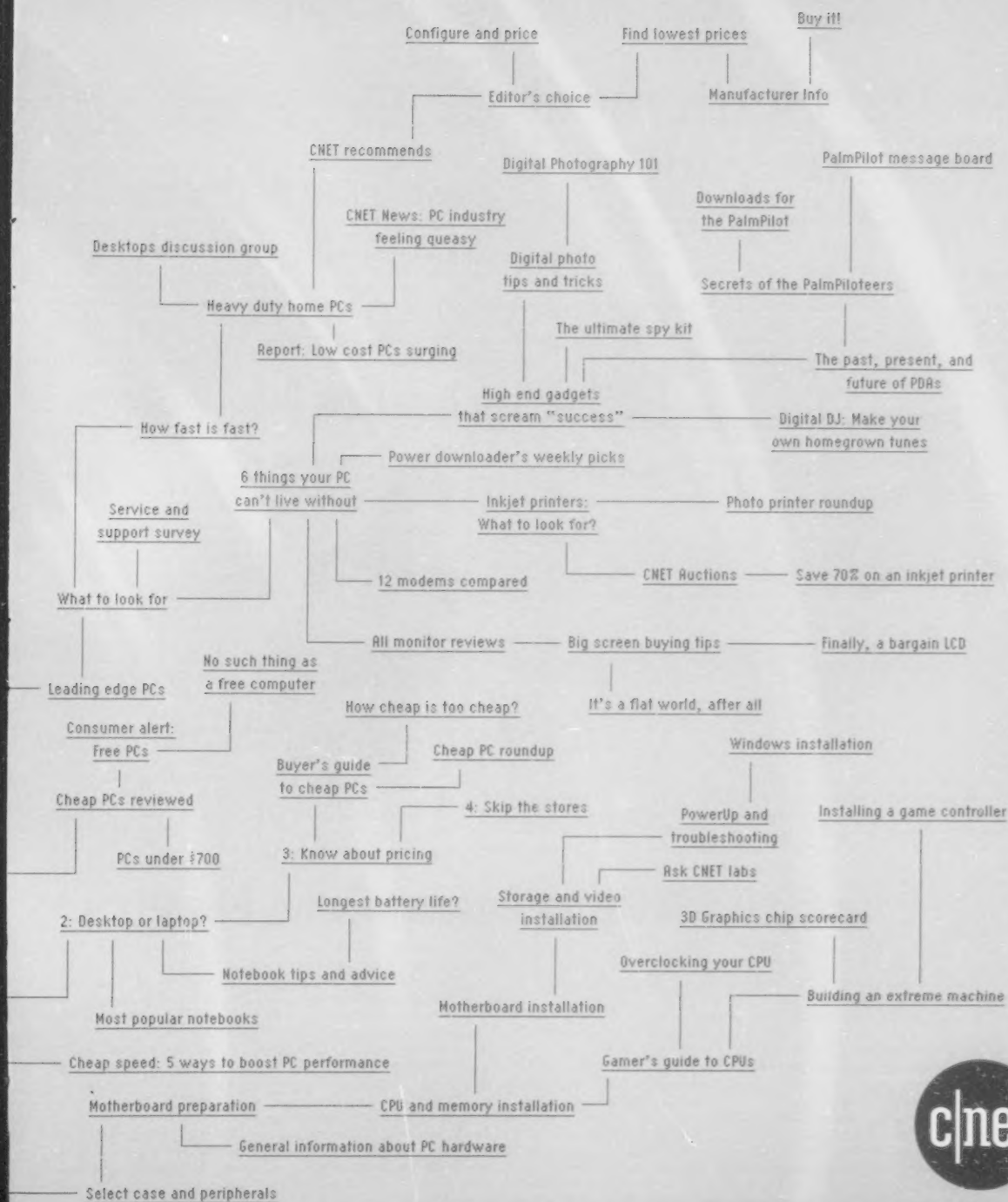
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Hardware: Do it yourself

Before you begin

Select CPU and
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Next-Day Settlement A Bear for Wall St. IT

Shifts from batch systems to real-time trades

BY THOMAS HOFFMAN

IMAGINE THE challenge of having to create a global network that processes millions of transactions instantly, must interface with thousands of companies and can't afford to crash.

That's what the securities industry is up against as it faces a mandate issued by the Securities and Exchange Commission to settle all trades within 24 hours, by mid-2002. The effort, known as T+1, is a bear for Wall Street firms that have historically used mainframe-based batch processing systems to clear and settle transactions.

As a result of the SEC plan, brokerages will instead have to move to a real-time clearing and settlement system. That means a firm like PaineWebber Inc. will have to execute a block of trades for, say, 100,000 shares of Cisco Systems Inc., route them to a clearinghouse and have them settled within 24 hours instead of the 72 hours that it takes today.

Internet Figures in Future

Although most trades are processed on big mainframes today, many experts say the industry is moving to online orders and may eventually use the Internet to hand off different parts of a transaction among brokerages, custodians and clearinghouses.

The massive undertaking will give Wall Street information technology shops little breathing room following the completion of their year 2000 projects, a mandated shift to decimalized stock prices by mid-2000 and, eventually, extended trading hours.

"This is going to be one of the biggest challenges the Street has ever faced," said Dennis Dirks, president and

chief operating officer of Depository Trust Co., a central securities repository in New York where stock and bond certificates are exchanged.

The effort will require brokerages and other players to "completely re-engineer" all of their trading processes as well as their underlying infrastructures, Dirks said. Trade groups such as the Securities Industry Association have already begun forming working groups of different firms to brainstorm on how to attack these issues.



DEPOSITORY TRUST'S DENNIS DIRKS says brokerages will have to "completely re-engineer their processes"

Compared with an industrywide effort in 1995 to shift from five-day (T+5) to three-day processing (T+3), T+1 "is like night and day," Dirks said.

For example, under the current structure, most "buy-side firms," or those that focus on accumulating stocks and other financial instruments, left clearing and settlements up to

custodians and banks. But with a smaller window under T+1, buy-side firms "will have to be connected [online] to get those transactions cleared," Dirks said.

One initiative that would help support T+1 is what is referred to in the industry as

straight-through processing, which would provide a nonstop flow of information from trade execution to settlement. A group called the Global Straight Through Processing Association (GSTPA) plans to build a global network for brokerages, custodians and other firms to improve and speed cross-border trading.

The group, which is made up of 40 firms, plans to launch a pilot system by late next year. For its network topology, the group has decided that only

the network should use an application-level session management protocol and run TCP/IP over a virtual private network, said Dave Cornelius, a director at Cap Gemini America in New York.

Creating such a network will likely cost \$50 million to \$100 million or more, said Larry Tabb, an analyst at TowerGroup in Needham, Mass. However, the cost for brokerages to modify their systems to interface with the GSTPA "will cost billions," Tabb said. ■

Fed Study Says Huge Labor Deficit on Horizon

Urges businesses to do more to recruit

BY PATRICK THIBODEAU
WASHINGTON

The U.S. Commerce Department last week warned that the U.S. is facing a huge demand for new IT workers, and it urged businesses to do more to train and encourage people to pursue high-tech careers.

In a study that measured the labor force against the demand for information technology employees in fast-growing technology fields, the Commerce Department predicted that the U.S. will need 1.3 million new IT workers by 2006: 1.13 million to fill newly created jobs and approximately



240,000 to replace exiting workers in these fields.

That's almost double the 1.5

million high-tech workers — computer programmers and scientists, systems analysts and engineers — that the government counted in 1996.

While speaking before the National Press Club, Commerce Secretary William Daley urged businesses to commit more resources to their training and retention efforts.

Building a new IT workforce will also depend, in large part, on the ability of businesses and schools to persuade young people, in particular, to seek high-tech careers.

Toward that end, Commerce unveiled a public information campaign designed to help make IT seem hip.

A number of Hollywood producers helped put the campaign together. ■

Depth of IT Skills Shortage Depends on Timing, Training

BY NANCY DILLON
AND BARB COLE-GOMOLSKI

Just how bad is the IT labor shortage? It depends on whom you ask. Information technology labor researchers paint a bleak picture, but hiring managers see more fluctuation in the current and future IT labor market.

For instance, Meta Group Inc. in Stamford, Conn., last week issued a report that said this year's demand for IT professionals will exceed supply by 400,000 jobs and projected that the number of unfilled jobs in 2005 will reach 1.2 million. Only 30,000 college graduates per year are entering the workforce prepared for those positions, according to the sur-

vey results, which were based on responses from more than 1,750 companies.

But Harvey Daniels, president of the Technical Recruiters' Network in Chicago, said things aren't as bad today as they were even just six months ago. "I'm seeing highly qualified Java programmers who were looking for \$90,000 last winter now asking for \$65,000 a year," Daniels said.

Michele Krebs, an IT recruiter at Rite Aid Corp. in Harrisburg, Pa., said she was surprised recently when she advertised for several entry-level PC technician positions and got "about 1,000 résumés." There were people who were trying to enter IT from all dif-

ferent fields, she said.

However, not all jobs are that easy to fill, according to recruiters. Finding certain specialists — particularly those who require a mix of technical and business skills — is vexing companies. "There's still a shortage of people with a broad base of IT knowledge," said Bill Cullifer, executive director of the National Association of Webmasters in Folsom, Calif. Those skilled in hot technologies, like Web development, are also sorely in demand, he said.

And when it comes to finding that talent, there's "no quick fix," said Peter Burris, a Meta Group analyst.

Burris outlined several ways

companies can attract and retain sought-after IT talent, most notably by investing more heavily in training.

"People say all the time that they want to keep their skills hot," said Maria Schafer, also a Meta Group analyst. But though virtually every company invests in IT training, only 19% consider it successful, she said.

Another problem is that IT training expenditures declined somewhat last year when companies moved their focus away from training to recruitment. Schafer said this "misfocus" needs correction because better business training will be a key element of IT recruitment and retention in the coming years. ■

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PAUL GILLIN

Going once, twice . . .

CONSUMER AUCTION SITES like eBay and Bid.com may get all the attention, but online auctions have some pretty interesting implications for big business as well. Activity is beginning to pick up in dozens of vertical markets where Web auctions may begin to have a real impact on how goods and services are priced. Securities auctions are sprouting on Wall Street. FreeMarkets Online Inc. helped clients auction off

more than \$1 billion worth of coal, aluminum, agricultural products and other low-tech commodities last year. USBid Inc. is a start-up creating auctions just for the electronics industry. Seafax Inc. allows fish buyers and sellers to match prices on its Web site.

The wild card with auctions is whether they will change our expectations of fixed pricing. Price lists, after all, came into being only because bartering was inefficient in high-volume markets. List prices artificially restrict buyers and sellers to a rigid set of parameters set by a third party. And no one pays much attention to them, anyway.

Auctions are the ultimate free market, which is why they're worth taking seriously. Most online auctions are now restricted to surplus goods and returns. But they don't have to stay that way. Distributors that use strict price and discount schedules might



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find that they can make more money matching buyers and sellers at whatever price the market will bear. Distribution could migrate back to something resembling the old barter model, with a server as the middleman.

All of this won't happen quickly, of course. Most markets have huge investments in existing sales forces, and the political issues are enormous. My guess is that a clash is coming, though. Established distributors won't let all that money

sit on the table, and once they get into the auction market, the rules will change.

Keep an eye on auctions. They may become a new channel for your business, and a new challenge for your systems. ■

My June 21 column, "Peril by E-Mail," sparked interesting feedback on the security challenges of e-mail attachments. Read it on our Web site: www.computerworld.com/more.

SEN. JOHN MCCAIN

Clinton should sign Y2K liability bill

WHILE THERE IS much excitement associated with the arrival of the new millennium, there is also a great level of anxiety about possible computer failures. To ensure that our economy isn't derailed with frivolous litigation, estimated to cost up to \$1 trillion, Congress has sought to establish a sensible policy for year 2000 litigation that will protect our economy.

Unfettered litigation is a grave threat to the economy. Without reforms, Y2K lawsuits will result in higher prices for computers, software, retail goods with embedded chips and insurance and will slow down and raise the cost of technological advancement. The bipartisan bill that Congress is preparing to send to President Clinton represents a balanced approach so that our businesses won't have to redirect resources from fixing Y2K problems to preparing for costly litigation.

Many businesses are purchasers and sellers of equipment with microchips and could find themselves as both plaintiff and defendant. A broad coalition of supporters — large and small businesses from different industries as well as the U.S. Chamber of Commerce, the National Retail Federation, the National Association of Manufacturers and virtually every high-tech industry association — have considered the legislation from both perspectives. Their conclusion is that Congress must pass and the president must sign meaningful legislation into law.

The main thrust of the legislation is to resolve Y2K conflicts before a race to the courthouse begins. The bill would do this by first requiring that a plaintiff file a 30-day notice to the defendant on the plaintiff's intention to sue with a description of the Y2K problem. If the defendant responds with a plan to remediate, then an additional 60 days would be allowed to resolve the problem. If the defendant doesn't agree to fix the problem, the plaintiff could sue on the 31st day. Our purpose must be to ensure that systems work, so that businesses avoid wasting valuable energy, resources and time in court.

Second, businesses with fewer than 50 employees would receive punitive damage caps of \$250,000 or three times the compensatory damages, whichever is less. That gives small businesses incentives to fix problems and protects them



SEN. JOHN MCCAIN (R-Arizona) is chairman of the Committee on Commerce, Science and Transportation. Contact him at john.mccain@mcain.senate.gov.



from the threat of bankruptcy. Third, the bill would establish a proportional liability standard, which ensures that defendants pay for exactly the damage they are responsible for. Finally, the bill sunsets in three years, assuring that it is temporary legislation to address a unique situation.

The McCain-Wyden-Dodd legislation protects the rights of consumers to redress legitimate grievances in court. More important, it provides the incentive and opportunity for problems to be prevented or quickly fixed without litigation. Numerous concessions have been made to arrive at the bipartisan version passed 62-37 by the Senate. This legislation provides a reasonable and practical answer to a very real problem. Trial attorneys who see a cash cow on the horizon are applying enormous pressure to defeat this vital reform. Narrow special interest should be subjugated to protect our national interests. The president should sign this bill into law. ■

DAVID MOSCHELLA

Let's stop fussing over taxation of Internet sales

SOME ISSUES really are hard; some just seem so. The whole debate regarding Internet sales taxation is a good example of the latter. Now that the Advisory Commission on Electronic Commerce has begun its deliberations, much will be said and written. But it's already clear that most people generally agree on the basic questions, and the required implementation shouldn't be

nearly as difficult as many people now suggest.

Philosophically, most of the 19 members of the congressionally empowered commission (11 from the public sector, seven from the IT industry, one from a citizens group and none from the retail industry) are already surprisingly close to consensus. There is broad recognition that the three-year

moratorium created in 1998 by the Internet Tax Freedom Act has been a great way to give the Web a significant boost. Indeed, a recent study by the National Bureau of Economic Research has found that if sales taxes were included, online spending by consumers could fall as much as 30%.

Although one should always be skeptical about this sort of hypothetical data, it's almost impossible to rationally argue that the Internet's special

tax exemption should continue indefinitely. Only the most zealous Web booster would try to make the case that the same goods should be taxed when sold through a physical store but not taxed when sold over the Web. It violates our basic sense of fairness, and companies such as CompUSA, Barnes and Noble and Toys R Us that have been hurt by online sales should have been more aggressive in pointing this out.

Thus, given the agreed-upon need to develop a media-neutral tax system, there are only three main approaches. Policy-makers could decide to eliminate existing physical-world sales taxes to match the Web's tax-free experience. Fat chance. The real choice is whether to replicate today's physical-world taxes on the Web or try to create a system that works well both physically and electronically. Of course, many Internet industry participants will push for a highly standardized, even a unified national, approach. With the Web, there's a natural tendency to think in terms of cross-border consistency.

But the reality is that, as long as tax payments are handled electronically, even the existing system wouldn't be all that difficult to implement. There may well be thousands of U.S. tax zones, but computers are perfectly capable of keeping track of lots of different sales tax rates. It's no big deal to match a ZIP code to a tax rate, collect the tax from the buyer at the time of purchase and then transfer the tax to the collecting entity. Indeed, because local tax variation is an important form of interstate competition, having 50 different state systems might be a good thing. There's a fine line between uniformity and collusion. Considering the many difficult governmental challenges stemming from the Internet era, taxation policy is actually relatively simple. Legislating privacy, copyright and pornography is inherently murky and dangerous, but collecting money is something that governments already do very well. Is there really any doubt that computers will eventually make taxes even easier to collect and even harder to avoid? ■

READERS' LETTERS

Afterthoughts on the business side of Y2K

I ENJOYED READING both Kathleen Melymuka's and Thomas Hoffman's articles about "After Y2K" [Business, June 7].

The questions then are not just "What's next?" but "What can we do, knowing what we know now, to meet our business needs using technology?" and "How can we leverage the work we have put into Y2K compliance to do this?"

Ms. Melymuka's article points to enterprise resource planning implementation, Web-enabled systems, legacy systems migration and front-end automation as examples of post-Y2K tactics, and these are hot projects that will only grow hotter in the next year. However, companies must understand the importance of a strong post-Y2K strategy for meeting business needs and maximizing the knowledge gained through Y2K work for a strategic advantage.

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ABOUT your package of stories, "After Y2K"

[Business, June 7]: Of course Cobol programmers will have work. As long as there are systems like PeopleSoft out there, there will always be a need for Cobol programmers. Just look under the hood. PeopleSoft's HRMS system, for instance, is full of Cobol. Maybe the folks at Merrill Lynch should look a little deeper.

John Martin
Pleasant Hill, Calif.
jmartin@integralsys.com

Jargon Judge lauded

I ENJOY Anne McCro-ry's attempts in Jargon Judge to prevent devaluation of our language. Unfortunately, at a time when graduates of Ivy League schools say, "Thank you for the support you've given Tipper and I," and other supposedly well-educated persons preface every sentence with "I was, like," she may be tilting at windmills. Still, it's a noble effort. My least favorite Silicon Valley jargon is best of breed.

I'm tired of best-of-

breed partners and best-of-breed solutions. Ask those who raise show dogs: Best of breed is a good label, but a dog is still a dog.

Lou Hampton
President
The Hampton Group Inc.
Washington
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Editor's note: For Jargon Judge's evaluation of best of breed, see the Nov. 30 column.

A few Quick points

I WOULD LIKE to clarify a few points made in your QuickStudy feature about PCI-X [Technology, June 14].

First, to be complete, any story about improving PCI performance should include PCI66, which has been part of the PCI spec since Version 2.1 was released in 1996. PCI66 (66 MHz, 64 bits) has been available in Sun workstations since 1997 and has appeared in Intel and Macintosh systems recently.

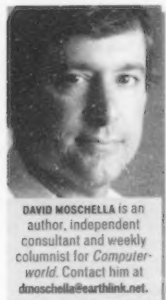
Second, the reason PCI-X is controversial is that it is not a simple upgrade from PCI/PCI66. While one can theoretically state that PCI-X has twice the performance of PCI66, it is much less

obvious how more than a slight improvement (10% to 15%) over PCI66 is possible. This won't change until I/O subsystems are redesigned to handle the new channel-based fabric architecture. Independent hardware vendors do not have resources to develop products for standards that do not have critical mass. For them, the pragmatic development step is to use

PCI66 now, followed by the Next-Generation I/O (NGIO) Forum's new serial channel-based fabric architecture. Version 1.0 of the NGIO specification will be approved this summer. The NGIO Forum can be reached at www.ngioforum.org.

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COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.



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Another factor is proper cooling. When computer systems left the security of the "glass house" computer room, they also left behind the environmental protection so vital to their proper operation. Computers have changed, but one thing remains constant - excessive heat can damage or impair the operation of critical computer systems and peripherals. Assuring constant uptime of computing systems cannot be fully achieved unless environmental protection considerations are factored into the equation.

And whoever said "ignorance is bliss" wasn't responsible for the operation of a computer network. Small problems can crop up from nowhere and suddenly become big problems if no one is aware of what's happening. Monitoring software that can be tailored to the level of control and size of network you must oversee is not a luxury anymore. It is an absolute necessity for maximum availability.

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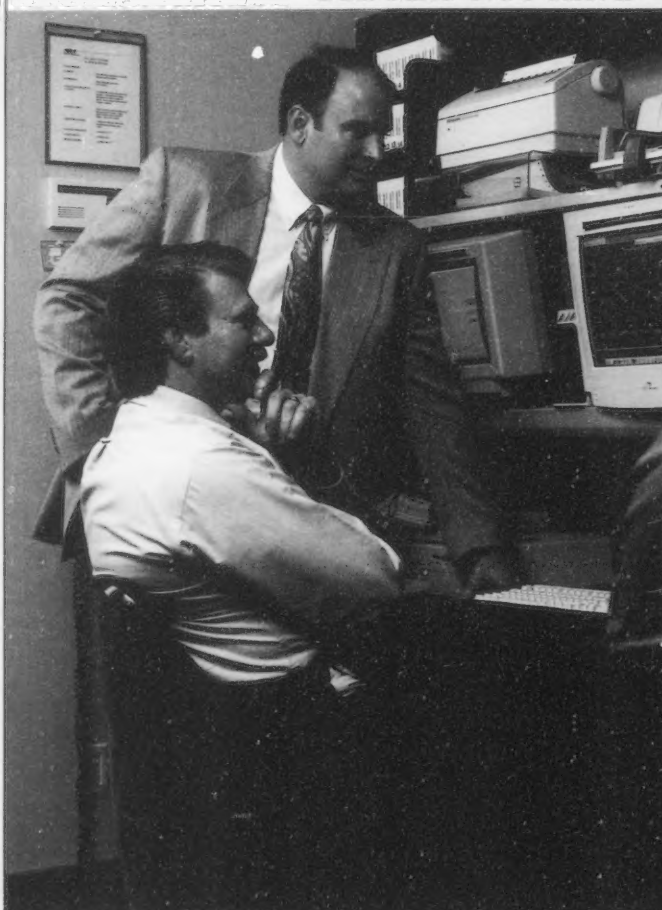
Liebert has more than 80 products designed to protect computer and telecommunications networks - whether it's a single PC or thousands of nodes spread around the globe. There's a Liebert protection system to fit every network power need, from surge protection and power conditioning to three-phase UPS for mainframe database servers. And Liebert offers all three major UPS technologies - off-line, line interactive and on-line - a claim not many manufacturers can make.

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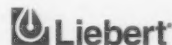


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JOHN GANTZ

The Dell-Boeing deal: The future of PC procurement

THOUGH THE ugly price wars among PC vendors have been well-publicized over the past several years — and now we have free or nearly-free PCs available for consumers — the change in the way vendors price their PCs has received less attention. Yet in the end, these changes will affect just about every corporation in America.

What got me thinking about this was the deal announced last week between Dell and Boeing, in which the latter, with an installed base of 175,000

PCs, selected the former as its worldwide PC standard for the next three years. The arrangement extends ones that were in place at several Boeing facilities to the whole global complex.

Why would Boeing put so many eggs in one basket?

The answer is fundamental to changes under way in PC procurement. In the old days, PC vendors would establish a

standard list price for their products and then discount to the channel off that price. The price was generally based on costs and some estimate of potential volume. Channel outlets then priced the standard products based on volume commitments from their buyers. Vendor pricing managers worked in the product groups.

With the advent of direct sales and build-to-order, however, that began to change. Companies competing with Dell, which could bid prices to users without involving the channel, began setting up their own "bid desks," which would quote prices for volume commitments that would, nevertheless, be fulfilled in the channel.

These bid desks work off some basic price lists and bill-of-material information to generate custom bids for each volume purchase. For smaller orders that don't warrant direct vendor price bidding, resellers can go to the bid desk of their distributor for prices. For corporations buying more than one computer at a time, the concept of "list price" for a PC has gone out the window. Each procurement is a custom bid. Pricing is now a function of the sales group, not the product managers.

Vendors don't have much leeway in their pricing, however. All are working off the same basic costs for a particular configuration. Price differ-

entials relate more to brand and service commitments than to system features. For Boeing to cut this deal with Dell, the company must have gotten assurances from Dell's bid desk that the price schedule will reflect either demonstrated bill-of-material costs or some other third-party pricing standard. With those assurances in place, Boeing could then lock in the considerable savings from going single-source.

Over time, I believe the price of PCs — whether "quantity of one" or "quantity of 175,000" — will become as transparent as the price of automobiles. Winning bids (and profits) will come from the add-ons — such as installation and de-installation, availability and reliability guarantees, customization, financing, service bundles and the quality of the sales force. Bid pricing will become much more automatic.

When we get to that point, I would expect to see a lot more single-source purchasing. And the PC vendors will be much more tied to the fortunes of their clients than they are now. How happy will Boeing be if Dell cuts a sweet deal with Airbus?

The big question for me is what happens to the channel? Frankly, I don't know. ■



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgant2@idcsearch.com.

MICHAEL CUSUMANO

Web start-ups: A wave of creativity or mediocrity?

IKEEP GETTING this sinking feeling that the Internet has unleashed not only tremendous entrepreneurial creativity, but also tremendous entrepreneurial mediocrity.

How else could so many unprofitable businesses become household names? How else could wanna-be entrepreneurs with no hope of succeeding in regular competitive marketplaces form so many new companies? How else could we have such highly credible people, such as Dr. C. Everett Koop, the former U.S. surgeon general, and Lou Dobbs, formerly of CNN's *Moneyline*, trying to become instant Internet multi-millionaires?

The Internet consists of networks that can grow in numbers and value at geometric rates.



MICHAEL CUSUMANO, co-author of *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft*, is a professor at MIT's Sloan School of Management. Contact him at cusumano@mit.edu.

Building market share now is clearly more important than earning profits. Therefore, most Internet companies hire quickly, market heavily and run huge deficits. They are supposedly investing in the future. Indeed, some Internet business ideas seem brilliant, like building browsers and servers, selling books, doing auctions or trading stocks. But even Internet companies should eventually be able to generate enough profits to make the investments worthwhile. Unfortunately, too many of the ideas and companies have mediocre chances of success.

Investors are realizing this and have bid down the value of many Internet companies in recent months. The IPO market is also becoming tougher as "angel" investors, venture capitalists and stock underwriters seem less willing to back weak ideas that are easy to copy or have no hope of generating a profit.

Of course, some powerful companies can take mediocre ideas and still make lots of money with their clout. For example, Yahoo and Amazon.com have gone on buying sprees of companies of various quality. But they can post links to the acquired companies' Web sites from their own and make the new companies work better — much better. In fact, Amazon.com's venture business may be its best hope of turning a real profit. AOL, Netscape, Microsoft, CNET, eBay and other companies with popular Web sites can do the same.

We have seen this type of leverage in other forms for many years. It's not so different from economies of scale or scope. I'm more concerned with the negative implications of the Internet bandwagon. It has distorted careers and dreams. It has distorted the labor market. It has wasted people's time. Over the past few decades, only one of out 10 start-ups has succeeded, and only one or two business plans out of a hundred make enough sense for a venture capital firm to back the idea. Yet people continue to send thousands of plans to these firms each month. More worrisome is that at leading universities and business schools, too many of our best students aren't going into industry but are joining or creating fledgling start-ups. Many corporate IT departments are also seeing talented managers and employees start new Internet firms.

I understand that the incredible entrepreneurship we have seen in the U.S. has led to the success of many U.S. industries, and consumers have benefited from new and cheaper products and services. But there are signs that major U.S. companies will soon be hurting for top-notch IT employees because so many talented MBAs and computer science graduates as well as seasoned employees try their luck in the Internet start-up lottery.

The underlying problem may be that too many Internet entrepreneurs don't think enough about their business models because they don't have to. If Amazon.com doesn't buy them, some traditional company or venture firm that wants to jump on the Internet bandwagon will. For investors, the weak firms present a pyramid scheme, or musical chairs. We have seen these games before, too. Many people will be left standing — with their hands and their pockets empty. ■

Q

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BUSINESS

CUSTOMER DATA, ITEM BY ITEM

If 7-Eleven's IT group took a big gulp before embarking on a massive systems implementation, it doesn't show as installation at its 5,600 convenience stores continues. Sales data means customers, not suppliers, determine what goes in the stores — and where. Satisfied customers should mean more sales. **► 38**

SOLD TO THE HIGHEST BIDDER

Even if you're wary of buying a house sight unseen, real estate brokers claim that online auctions are changing the industry. They can sell to the highest bidder with far less legwork than traditional means — for only a fraction of their usual commission. **► 40**

CONTRACTORS: OUT OF LUCK?

Our Second Quarter Hiring Survey shows that although IT managers are still in hiring mode, it's permanent staff — not contractors — they want. The skills in demand will sound familiar: Web, ERP, project management and business savvy, to name a few. **► 50**

YEAR 2000 BRAINSTORMING

The best ideas for creating year 2000 contingency plans bubble up out of brainstorming sessions between IT and business folks — and

even competitors and outsiders, say Y2K coordinators at a securities industry conference. And they should know: Their industry is among the most advanced in tackling the year 2000 problem. **► 41**

WEB FRONT END CUTS TRAINING

Resort Condominiums Inc. built a Web front end so its call center staff could access information for reservations more simply. Doing so cut training time by 25% and reduced the time of each call by five seconds. **► 40**

HIGHWAY ROBBERY

A stalwart auto industry contract manager fights off an outrageous \$154,000 "software upgrade fee." **► 53**

QUICKSTUDY: ACCOUNTING

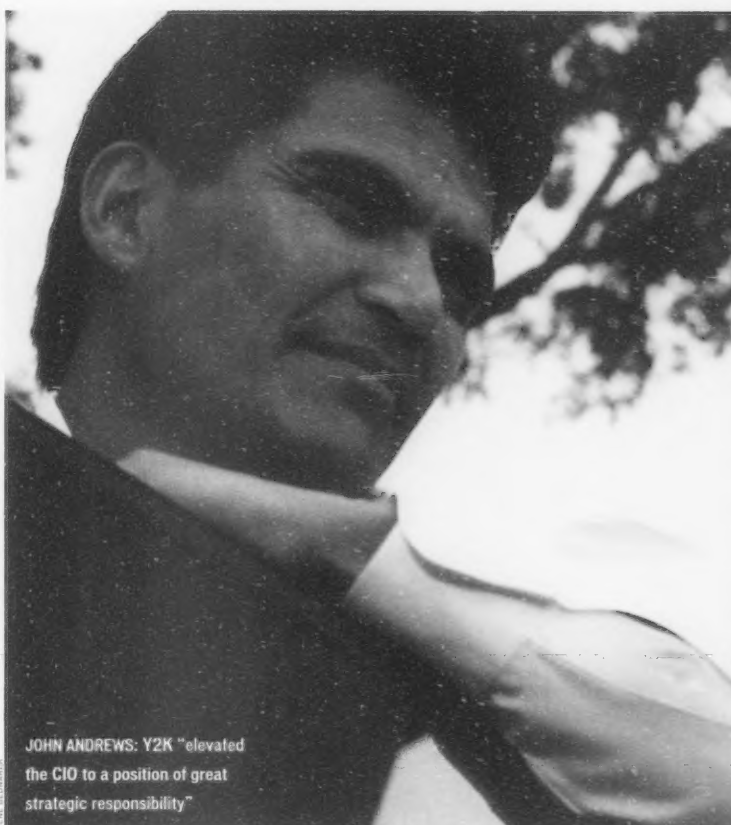
Accrual-based accounting and cash-based accounting can take the same financial transaction and give you completely different results for your books. **► 52**

BURNOUT!

How do you beat it? Recognize it in your employees, adapt to changing business needs and offer training and competitive salaries. **► 46**

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JOHN ANDREWS: Y2K "elevated the CIO to a position of great strategic responsibility"

YOU WANNA BE THE CEO?

TECHNOLOGY-DRIVEN companies are finding that CIOs such as Sanga International's John Andrews (above) have what it takes to become CEOs. What's that, exactly? It starts with technical know-how, of course, but there's a lot more — especially cultivating good relationships with other executives in your company.

48

Sales Data Helps 7-Eleven Maximize Space, Selection

Inventory no longer driven by suppliers

BY DAVID ORENSTEIN

DALLAS-BASED 7-Eleven Inc. is rolling out an inventory management/sales data system to not only make the most of its limited shelf space and product assortment, but also to move new products into its stores and improve its position with its suppliers.

To make it all happen, all 5,600 franchisee- and company-owned 7-Eleven stores nationwide are getting an information technology overhaul that will transform the mini-marts into data marts.

The system encompasses new software and hardware for each store's checkout counter and back office, as well as a new corporate data warehouse — and the Integrated Services Digital Network bandwidth to connect them all (see related story below).

A Big Gulp of IT

Seven years ago, 7-Eleven's stores didn't have so much as a PC in them. Now they're leading their industry with a new inventory management and sales data system, analysts say.

In the stores, the company has deployed a scanner- and touch-screen-driven checkout system running DOS on NCR Corp.'s 7450 and 7453 PC cash registers. Store clerks also use wireless handhelds to receive guidance about what item belongs where and to order products.

In the back office, the stores run the applications for data reporting and analysis, pricing, accounting and other functions on Windows NT 4.0. The servers are 233-MHz Intel Corp. Pentium II machines that also are leased from NCR.

At corporate headquarters, 7-Eleven runs an increasingly massive Oracle Corp. data warehouse on Hewlett-Packard Co. Unix servers that aggregate the daily batch transfers from each store. — David Orenstein

Analysts said the system's a major technological leap for the 95,000-store convenience-store industry. "I don't know anybody who is doing more," said Jonathan Ziegler, an analyst at Salomon Smith Barney Holdings Inc. in San Francisco.

Because convenience stores are small and generate little revenue — the average 7-Eleven gets 1,100 visitors per day but generates only \$1.2 million in sales per year — companies have avoided throwing expensive technology at them, Ziegler said. But "technology is going down in price," he said.

The system probably cost at least \$50 million, or about \$9,000 per store, said Dennis Telzrow, an analyst at Hoak Breedlove Wesneski & Co. in Dallas. "They'll get the return on their investment," he predicted. The company didn't disclose the project's cost.

7-Eleven is the nation's No. 1 convenience-store chain in sales, with \$7.3 billion last year. The company's earnings have been dropping in the past few years, though, partly because of IT investments, according to 7-Eleven's annual report.



7-ELEVEN'S GREG KALOUSTIAN: Dramatic increases are a result

The system rollout began early last year. At a pace of 200 stores per week, the project's on its way to wrapping up next month, said store systems manager Brady Giddens.

The system lets store managers take control of the 2,500 or so products in a typical, 3,000-sq.-ft. store. With reports based on item-by-item

sales data, managers can determine what hot merchandise deserves better displays and which duds should be pushed aside or discontinued to open up precious room. The system will also alert managers to upcoming weather events and other news that could affect which items will be in demand. Franchisee Greg Kaloustian,

who owns four stores on Long Island, N.Y., including two that have the system, said the system showed him he should dedicate more shelf space to nutritional snack bars. Powerbar-hungry customers are making that decision pay off. "It has meant a dramatic increase in cases where we've made changes like that," he said.

Without the ability to gather and analyze the data, 7-Eleven knew only what it was buying from suppliers, not what consumers were buying from its stores, said Tom Ingram, retail information systems manager.

At the store level, suppliers would often push products to satisfy their own quotas, even though they weren't the best use of his shelf space, Kaloustian said. "We were being driven by the vendor," he said. "We're being driven now by sales."

Using sales data, 7-Eleven suggests about two dozen new products to store managers weekly, as well as which products to dump to make room, said spokeswoman Margaret Chabris. It also has been trying to extend its fresh and perishable offerings, which makes optimizing sales and managing inventory more urgent.

The data may also help with sales forecasting and collaborative product development with suppliers, Chabris said. But a more immediate benefit of the system is a component that connects each store to suppliers and regional warehouses to manage ordering and fulfillment, she said. ▀

Complex Sales Commission Process Automated

Software calculates salespeople's bonuses

BY CRAIG STEDMAN

For some companies that use batteries of spreadsheets to manage payments of commissions and bonuses, enough is enough. They're turning to packaged software that was designed to automate the process.

The software isn't cheap: A company with 400 salespeople will have to shell out \$300,000 or more in license fees. But users taking the plunge said they expect the applications to simplify the chore of setting

up, managing and tracking incentive compensation plans.

Spreadsheets work "when you have a simple plan," said Manoj Tripathi, CIO at Jamba Juice Co. in San Francisco. "But with every payout, it became increasingly complex to manage."

Jamba Juice, a chain of fruit-smoothie stores, switched to compensation management software four months ago. The package, from Incentive Systems Inc. in Burlington, Mass., automatically calculates bonuses owed to more than 200 store managers.

Incentive released its software in March, and another start-up — San Jose-based

Callidus Software Inc. — announced a similar product last week. Oracle Corp. and Trilogy Software Inc. in Austin, Texas, also sell compensation packages that they said have been bought by 60 and 30 companies, respectively.

Lennox Industries Inc., a maker of air-conditioning and heating systems in Richardson, Texas, is one of Trilogy's users. Lennox began managing payments to dealers with the software in May. Another system for its 300 salespeople is due to be added by year's end.

That will be tied to SAP AG's R/3 financial applications and used to create more detailed

sales incentives. Trying to do that on spreadsheets "would crumble [it] under its own weight," said Mark Dolan, sales controller at Lennox.

Principal Financial Group, a financial services firm in Des Moines, Iowa, uses home-grown mainframe applications that can't handle the commission payment requirements of some banks and brokerages interested in selling its pension plans and other products.

"We had to walk away from some possible [deals]," said Gary Scholten, vice president of retail information services. To fix that, Principal Financial plans to switch to Oracle's compensation software early next year to cover more than 15,000 sales agents and managers. ▀

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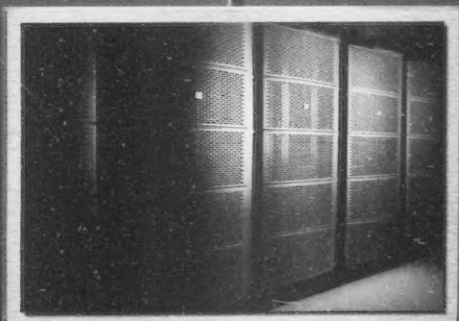
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CAN YOUR DATA CENTER DO THIS?

E-Auctions Change Real Estate Model

Proponents say process brings seller top dollar, mortgagee the best deal — easily

BY JULIA KING

FORGET balloons and Sunday afternoon open houses. Dee Mellor, a real estate agent in Littleton, Colo., listed a \$1.3 million house for sale at www.Rbuy.com on a recent Monday morning and by the following Thursday had bidding inquiries from several prospective buyers.

On July 10, the house will go to the highest bidder, with Mellor orchestrating the online auction — in \$1,000 increments — from her office PC. Once the house is sold, she will pocket the same commission she would have collected had she chauffeured the potential buyers in her 1998 BMW.

Her cost of doing business on Rbuy.com: 0.5% of the final sale price.

"The Internet has changed everything," said Mellor, a 27-

year industry veteran. "Realtors who are not into the Internet will be out of business in the next year."

Launched earlier this month by Denver-based Rbuy Inc., Rbuy.com is the first online real estate auction site controlled by real estate agents. In that respect, it mimics the traditional, real-world home-buying process, but with a slight twist. Other sites list properties and charge buyers and sellers to list or sell, but Rbuy is exclusively for real estate agents.

Agents and sellers privately set the terms and conditions of the sale, while the market essentially sets the selling price during the auction period, which can last from three to 10 days. The Internet enables all interested buyers to see and bid on the property regardless of where they live.

"As a result, the seller gets

the top dollar for the property," said Charles Huggins, president of Rbuy Inc. And real estate agents like Mellor significantly reduce the cost and amount of time associated with traditional real estate sales negotiations.

"People that are using the Internet aren't into bargaining," Mellor noted. "They're into getting their house sold as fast as possible. With this [Web site], they can set up a time and hold an auction whenever they want."

Mortgages, Too

Another new Web site (www.realestate.com), run by Atlanta-based RealEstate.com Inc., is bringing the auction process to the mortgage business. Consumers like Victoria Cambrice enter the amount of money they want to borrow, how much money they owe to creditors and the loan terms they want. Those customer requests, which are stripped of name, address and other identifying data, are then put up for bidding by some 200



The seller gets the top dollar for the property [through online auctions].

CHARLES HUGGINS,
PRESIDENT, RBUY

registered lenders.

Within 24 hours of going online, Cambrice, a financial analyst at Delta Air Lines Inc., received an e-mail from the Web site containing the contact information for the lender with the lowest bid. She paid nothing for the service and was under no obligation to call the lender. But she did call and got a loan.

"I paid 1% to close [the loan],

and I saved three points. Plus my mortgage rate dropped from 12% to 8%, so basically I'm going to recapture the cost of refinancing in six months," she said.

But just as valuable, she said, is the time and hassles she saved. The paperwork also was minimal.

"If you've ever tried to get a mortgage, just to get qualified is a hassle," said Cambrice, who has bought and sold homes three times. "Mortgage people are so invasive. They ask you about your soul. It's intimidating, which is why people don't want to deal with it."

By comparison, "I did all of this from my computer. This is the best thing since sliced bread, but so many people are not savvy to doing it," she said.

Theodore Iacobuzio, an analyst at TowerGroup in Needham, Mass., agreed that only a very small fraction of buyers in the \$1 trillion mortgage industry shop for and buy loans online. The real estate industry in general remains largely a face-to-face business in which consumers are still more comfortable doing business in the real world.

"As a friend of mine pointed out, you can't test a house for termites online. Somebody has got to go there and look," Iacobuzio said. ■

Adding Interface to Mainframe Apps Cuts Training Time

Firm takes shortcut with browser front end

BY JAIKUMAR VIJAYAN

When a 1996 acquisition abruptly shelved a \$100 million information technology makeover at Resort Condominiums Inc. (RCI), so too were plans to migrate some of the company's aging mainframe applications to a client/server platform.

But the company still needed to find a way to cut training costs related to its mainframe-centric call center staff.

So instead of completely rewriting its circa 1989 mainframe applications, the company in January 1998 decided at least to stick a graphical user interface (GUI) in front of the applications to make mainframe access easier. And it has — cutting training time by 25%

and speeding up customer service.

"We knew we were not going to be able to spend the money we needed to rewrite our mainframe applications... but we needed to find a way to shorten the time it took to get new hires productive," said Brad Dettmar, RCI's information technology director in Indianapolis.

Time-Saver

Eighteen months and \$450,000 later, RCI is rolling out the GUI to all 7,000 of its call center employees worldwide. It has cut training time from four weeks to three and the average time spent by RCI representatives on the phone

JUST THE FACTS How RCI Cut Training Costs

Business issue: Cut training costs related to call center staff

How: Make it easier for reservation staff to access and manipulate mainframe data

What it did: Implemented CST's Jacada Web-to-host access technology, which lets users access mainframe data from a browser-enabled client

Results: Training time was cut from four weeks to three; call center staffers now spend five seconds less per call

— on a total of about 20,000 calls per day — by five seconds apiece.

RCI is an example of a company that's using tools that understand and extend legacy

data to other platforms for strategic business benefit, said James Sinur, an analyst at Gartner Group Inc. in Stamford, Conn.

"Sometimes it is simpler to extend your legacy platforms than to build a brand new one from scratch," he said.

Growing Market

Gartner expects the "very hot" market for such products to reach \$1.5 billion by 2001, from slightly less than \$1 billion today.

RCI, one of the largest sellers of time-share exchange vacations in the world, was acquired by Parsippany, N.J.-based holding company HFS Inc. in 1996. Today, it is a wholly owned subsidiary of Cendant Corp.

Prior to implementing the

GUI, RCI reservation counselors used IBM's 3270 non-programmable terminals to access mainframe-based information on RCI's properties worldwide. The process was slower because the terminals also presented information on other aspects of the business.

"We spent more than half the training time telling people not to do anything with this field or not to touch that group of information," Dettmar said.

So the company implemented a Web-to-host access middleware technology called Jacada for Visual Basic from Atlanta-based CST Inc. No changes to the underlying applications were required.

The CST software, which is installed on the mainframe and client PCs, allows RCI to group all its reservation information into point-and-click screens that can be accessed via any standard Web browser. ■

Brainstorming Best For Y2K Planning

Most creative ideas generated by teaming IT pros with businesspeople

BY THOMAS HOFFMAN
NEW YORK

THE BEST way to cover all your bases in creating year 2000 contingency plans is to brainstorm with business leaders across the company, with competitors — and even with industry outsiders.

That's the advice from Y2K coordinators who attended a one-day conference on the topic hosted by the Securities Industry Association (SIA) here two weeks ago. The securities industry is a good sounding board for such ideas, given that this sector is among the most advanced in tackling the Y2K problem.

Besides, Wall Street can't afford to leave any stone unturned because brokerages, clearinghouses and stock exchanges are so dependent on one another to process and clear stock trades and other financial transactions.

For example, when an SIA working group last summer began crafting a 10-point contingency planning framework that it just published at www.sia.com, the areas that had to be considered "weren't obvious to us at the beginning," said Gerald Corrigan, chairman of the SIA contingency planning committee and a managing director at Goldman, Sachs & Co.

However, brainstorming among representatives of rival brokerages such as Merrill Lynch & Co. "is what made the difference" in helping the SIA committee nail down the plan, which includes creating a list of key personnel who will be responsible for responding to Y2K-related operational breakdowns, Corrigan said.

Others suggest that firms develop policy guidelines about whether and what information should be released to the press and public in the event of Y2K problems. In addition, backup services should be identified and evaluated in cases where single service providers (such as gas or electric companies) create critical vulnerabilities (see chart).

Although it's not too late to devise a contingency plan, time is running out. With roughly six months left before

2000 is rung in, "very few" U.S. organizations have actually begun to implement Y2K contingency plans, said Edward Yardeni, chief economist at Deutsche Morgan Grenfell Inc. in New York.

"Most companies are preparing for a natural disaster type of event [that would affect their operations for two or three days], not the four weeks or more" that a worst-case scenario would create, he added.

Sharing contingency plans with players in other industries can also be helpful, particularly in areas in which

What Does Your Year 2000 Contingency Plan Include?

| CATEGORY | PERCENTAGE |
|---|------------|
| Backup power and communication | 62% |
| Crisis-management team | 42% |
| Reinforcing mission-critical applications | 38% |
| Manual business transactions | 30% |
| Fortifying supply chains | 20% |
| Don't know | 6% |
| Other | 48% |

Base: Survey of 49 Global 2,500 companies, multiple responses allowed

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS.

companies have common requirements such as identifying and procuring electricity from a secondary power source. It worked for Rick McDonald.

McDonald, the year 2000 project director at broker D. A. Davidson & Co. in Great Falls, Mont., learned from a Y2K community outreach program that a banker in the group had

devised a program to educate the bank's customers about the need to keep accurate files on their accounts in the event the bank experiences Y2K-related problems. McDonald's company took that idea and plans to send out a similar worksheet to its customers with their June investment statements, McDonald said. ■

Health Care in Poorest Shape in Philippines

Hospital sector, with no Y2K correction project, will rely on contingency plans

BY MAYME P. FERNANDEZ
MANILA

A recent report by a Philippine government agency on year 2000 compliance in that country shows the health care sector to be in the most serious trouble, with no actual systems correction but active contingency plans. The financial sector leads with 81% readiness.

The report, prepared by the Philippines Year 2000 Commission, measured readiness according to five project stages: awareness, assessment, conversion, testing and implementation.

Those stages were given values based on the weighted average adapted from the "Year 2000 Tool Kit" published by the World Bank to compute the overall progress of different sectors.

By far the most prepared is the financial sector, made up of private and government banks, insurance companies and financial intermediaries. To date, critical systems at banks are 88% converted and 74% tested; they were expected to be completed by the end of June.

But the hospital sector, with no systems correction project because of limited resources, has concentrated on pursuing an alternative strategy — contingency planning.

At a recent seminar, year 2000 task force representative Anefe Hachac of the Department of Health said a hospital networking and referral system will counter possible malfunctions of medical equipment and shortages of drug supplies.

The purpose is to enable the transfer of patients to hospitals that have Y2K-compliant facilities so continuous care and treatment can be administered.

Other plans include using alternative medicines, manually processing documents if information technology systems fail and using two-way radios if telecommunication problems arise. For power failures, generators will run laboratories and dietary, operating and emergency rooms, according to Hachac.

The commission's survey found that private hospitals are ahead in their year 2000 efforts, with a 57% rating; government hospitals are at 47%.

Medical equipment is currently being tested, upgraded and certified by vendors. However, the Department of Health is encountering some difficulty in contacting the vendors of medical equipment for testing and certification because most sophisticated equipment is donated by foreign sources, the commission said.

The problem lies with embedded systems found in diagnostic equipment. Life-support systems are electromechanical in nature and won't be affected, the commission added. ■

Fernandez writes for Computerworld Philippines.

SNAPSHOT

Competitor Comparison

How the nation's top two fast-food companies are doing on their year 2000 work:

| | MCDONALD'S CORP. | TRICOR GLOBAL KFC, TACO BELL, PIZZA HUT |
|-------------------------|---|---|
| Fortune 500 rank | 134 | 190 |
| Latest cost estimates | \$25M* | \$43M** |
| Estimate of total costs | \$40M | \$68M to \$71M |
| Notes | Plans include stockpiling products and equipment; may develop alternative transportation methods to deliver products. | Contingency plans include lining up alternative suppliers and developing plan for dealing with international suppliers. |

*As of March 31; also spending \$40M to develop new systems

**As of March 20

SOURCE: COMPANIES' FORM 10-K FILINGS IN MAY WITH THE SECURITIES AND EXCHANGE COMMISSION

Regional Update

Readiness for Y2K varies by sector in the Philippines

| SECTOR | % COMPLETED |
|---------------------|-------------|
| Finance | 81% |
| Manufacturing | 67% |
| Telecommunications | 66% |
| Utilities | 64% |
| Government services | 61% |
| Health care | 55% |

SOURCE: PHILIPPINES YEAR 2000 COMMISSION REPORT

When the Skills Gap Creates a Pay Gap

If you have to pony up big bucks to fill a key IT position, you could be sowing discontent among your staff. Here's how to keep everyone happy

BY ALAN S. HOROWITZ

YOU WANT to hire a hot-shot programmer or systems analyst, but given today's information technology skills gap, you know you're going to have to pay dearly. And that may touch off morale problems among IT professionals who've toiled under you for years.

"It's a very sensitive issue, one that organizations deal with by not talking about," says Jeremy Seligman, CIO and vice president at Frontier Corp., a telecommunications company in Rochester, N.Y.

But observers say it is worth talking about. Seligman attributes many pay-inequity problems to the tight IT labor market. "A year ago, people said [the labor shortage] was a Y2K problem. It's not — the world is becoming an IT kind of place," he says.

IT managers say they're looking for candidates whose skills include experience in e-commerce, data warehousing and Unix system administration. The following are six tips for keeping staff morale up while paying the big bucks to fill those crucial positions:

1. Use bonuses.

Ebby Khazaeli, senior vice president and CIO at Trustmark Insurance Co. in Lake Forest, Ill., uses sign-up and retention bonuses. He offers bonuses to new hires, usually about 20% of the first year's salary, payable over three years.

At the end of each of the first three years, employees get one-third of that bonus. Unpaid bonus money earns 12% interest per year; employees who

leave early forfeit any unpaid portion of their bonuses. The bonuses help attract and retain new workers while keeping base salaries for all employees level, Khazaeli says.

2. Communicate.

An IT manager should identify those people he doesn't want to lose and address salary issues directly with them, suggests Thomas Ferratt, associate dean and professor of management information systems at the University of Dayton in Dayton, Ohio. Adjust those workers' salaries when research studies suggest their pay hasn't kept up with the market, and develop career paths for them, he says.

Ferratt says he's seen employees who changed their minds and stayed with a company after an IT manager explained what he saw for them in the future.

3. Create value beyond compensation.

Yes, money counts — but there's more to a job. To avoid having to adjust salaries every time there's a pay spike in the market, "try to build a package that makes people feel like they're treated fairly," Seligman says. That can include offering training and tools, defined career paths, stimulating work challenges — and even "making the workplace fun," he says.

Khazaeli says he allows flexible work hours, which are particularly valued by employees with long commutes in the traffic-clogged Chicago area.

Dianne

King, director of IT at hair care and cosmetics distributor Sebastian International Inc. in Woodland Hills, Calif., says she's been able to maintain good working conditions by not requiring her people to be on-call 24 hours per day or work weekends.

4. Know the market.

Bill Haser, CIO and vice president of IT for the Americas at Lake Forest, Ill.-based Tenneco Automotive, a division of Tenneco Inc., subscribes to market researchers' salary surveys to keep in touch with the going rates. "If we have people not at the market rate, we adjust their pay," he says.

Haser warns that if you pay new people more than the current ones, the existing workers will eventually find out — and you'll lose them. Also vital is knowing current market wages. He says he used to do just an annual salary review but now "constantly" reviews salaries.

5. Be proactive and anticipate.

If Bill McConnell anticipates that the pay of a new hire will be an issue with a particular existing employee, he'll talk directly to that person, he says.

"We try to figure out who [it] will be an issue with, and talk to that person one on one," says McConnell, CIO at Guidant Corp., a medical devices manufacturer in Indianapolis. To put the

current worker at ease, McConnell says he'll describe the circumstances surrounding a new hire, the department's philosophy and the situation in the marketplace. "We spend a great deal of energy trying to anticipate how [existing employees] might feel," he says.

6. Understand your goals.

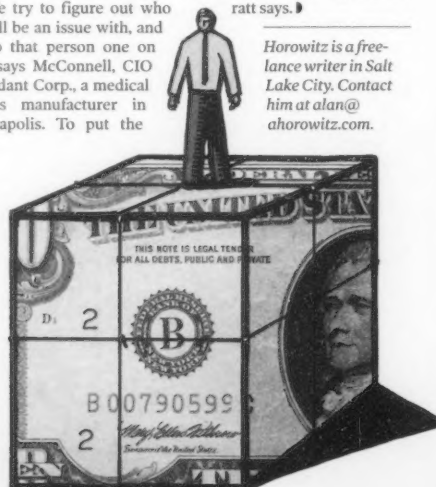
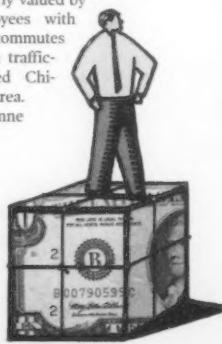
Inequities in pay are justified when they're the result of well-thought-out strategies. Ferratt's model ties the IT department's salary levels to the department's goals. If you want to keep IT employees for several years, he says, your salary levels might not need to be as close to the market as they would with shorter-term employees.

Instead, provide longer-term employees with valued perks such as career development and training in leadership and business issues. If you're trying to keep IT people on board for an intermediate length of time (three to seven years), your pay scale needs to be closer to the market's, Ferratt says.

Training for intermediate-length employees should be more technically oriented, Ferratt says. If you have an immediate need, you might hire consultants or independent contractors and expect to keep them for only a short time. Those IT professionals receive few, if any, perks but draw the highest pay, he says.

Although an IT department has different salary levels in that scenario, they're justified by the department's goals, Ferratt says. ■

Horowitz is a freelance writer in Salt Lake City. Contact him at alan@ahorowitz.com.



BRIEFS

Xerox Names CIO

Patricia Cusick, 50, has been named vice president and CIO at Xerox Corp. Formerly vice president of information management for business group operations at the Stamford, Conn.-based company, Cusick replaces Gary Banks, who recently left Xerox.

Pilots to Engage in Virtual Battles

Lockheed Martin Corp. is building networked F-16 simulators that will allow pilots of the U.S. Air Force Air Combat Command to engage in virtual missions with pilots on simulators at locations worldwide.

The simulators will let pilots experience full-mission briefings, participate in virtu-

al combat sorties and link with other participants, such as ground or tank crews. The simulators run on Unix servers and workstations from Silicon Graphics Inc. in Mountain View, Calif.

BellSouth Users Can Check Y2K

BellSouth last week relaunched its year 2000 Web site (www.bellsouth.com/year2000). One new feature lets BellSouth customers check the Y2K-readiness of their area by typing in their area code and the first three digits of their phone number.

As of May 30, 93% of BellSouth's central office switches had been upgraded to year 2000-compliant software, according to the company.

NEW REPORTS

Market Analysis

A new report from International Data Corp. (www.idc.com) in Framingham, Mass., looks at the global market for Internet usage and e-commerce.

The report, "The Global Market Forecast for Internet Usage and Commerce," is segmented by region. It sizes the market for Internet commerce and gives the number of users accessing the Web and the value of their transactions.

The report costs \$4,500.

Human Touch

In a new survey by Jupiter Communications Inc. (www.jup.com) in New York, 40% of respondents said they would feel better about buying online if more human contact was involved. According to "Account Management: Re-intermediating the Human Touch for Most Valuable Customers," that means traditional firms attempting to compete online must leverage their sales organizations.

The survey is available by subscription.

SNAPSHOT

The Ties That Bind

Customer relationship management (CRM) facts:

- CRM projects cost an average of \$3.1 million
- Companies expect revenue to increase 8% per year after implementing CRM
- CRM projects are implemented in phases rather than as a total package
- Companies are more concerned with retaining customers than attracting new ones

Base: Survey of 300 U.S. and European companies

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

PAUL A. STRASSMANN

End build-and-junk

THE PAST 50 years of computing can be seen not only as a fantastic explosion of new capabilities, but also as a progressive accumulation of costly software junk. The entire history of computing can be characterized as an evolutionary — and increasingly expensive — sequence of build-and-destroy cycles. That has to change: We're on the verge

of an intolerably expensive new cycle. But thanks to the options being offered by out-sourcers and software innovators, there's a way to break the cycle.

With each new computing cycle, much of what has been invested had to be junked for progress to take place. Consider the following:

■ At the end of the punch-card accounting cycle (about 1958), more than \$100 million worth of hard-wired control boards had no utility.

■ When applications began to be stored on disk memory instead of magnetic tape (about 1972), more than \$5 billion worth of programs had to be replaced.

■ When minicomputers began shaping the distributed computing environment (about 1976), as much as \$150 billion of software needed a complete overhaul.

■ The advent of the microcomputer (starting in 1983) saw an exodus of applications from mainframes and minicomputers to desktops. More than \$650 billion worth of installed software lost value.

By 1990, the chaotic proliferation of powerful personal computers had created a control crisis that it was hoped would be cured by client/server architectures. We have now come to the end of that cycle, and the pundits tell us that the Internet and e-commerce offer the magic solution. Be ready to write down about \$3 trillion worth of hard-to-maintain and insecure programs.

That \$3 trillion is a significant share of total anticipated software spending in the next 10 years. With the hardware component of IT budgets dropping because of falling hardware prices, most of the world's spending for IT in the next technology cycle will be for software and software-related costs. With rising IT budgets, that suggests software spending in the next 10 years of well over \$10 trillion. Unfortunately, migration, conversion, integration and maintenance will absorb most of all software costs if the current, wasteful practices are allowed to continue.

Executives looking for competitive advantage won't be satisfied with only a fraction of their total software budget being deployed for profitable value creation. U.S. executives need rapid innovation, not expensive preservation of what is becoming an increasingly costly relic.

Executives have three options. First, they can continue on the current course of escalating computer budgets and painfully extracting value-creating applications from whatever funding is left over from maintaining the systems now in place. Second, they can find outsourcers that will act as custodians of the junk pile. Third, they can find technically capable innovators to come up

with technologically advanced solutions at radically lower prices than a firm could on its own.

The third option is in reach. New software technologies — such as Java running in a networking environment, and relying on processor-independent code — have life-cycle costs of less than \$1,500 per function point. That's far lower than the comparable life-cycle cost of more than \$4,500 of the current installed base. (The estimates come from software metrics expert Capers Jones, a credible source of such data, and my own estimates of code obsolescence.) Clearly, there's money to be found in managing software libraries for modernization if you can set up a clever way to manage that transition.

There will be profit opportunities for the junkyard custodians as well as for the innovators who can lead us out of the next cycle of trillion-dollar waste. I'm betting

that most companies will wager on the innovators. There's much more value available from delivering new profit opportunities than from managing a dying well of assets. ■

Strassmann (paul@strassmann.com) has managed his way through every computer cycle because money was always available to pay for replacements. Unfortunately for current IT executives, there isn't enough money left to do that again in the next cycle.

U.S. executives need rapid innovation, not expensive preservation.



A black and white photograph of two hikers with large backpacks ascending a rocky trail in a forest. The hiker in the foreground is on the right, wearing a cap and using a trekking pole. The second hiker is behind and to the left. The background is filled with tall evergreen trees under a cloudy sky.

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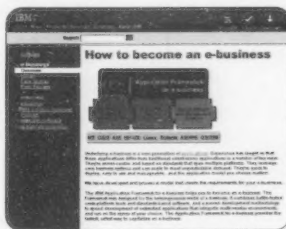
IBM e-commerce software powers the REI online store — and sales that exceed projections by over 360%. Can IBM e-commerce software help you?

IBM software is helping thousands of companies build, run and manage powerful interactive e-commerce Web sites. For REI, that means everything from state-of-the-wilderness gear you can buy to clinics on outdoor skills, enthusiast bulletin boards and a world of trips and tours. The scope of REI's offerings led them to IBM.

IBM software provides the building blocks for all facets of e-business, including secure payments, electronic catalogs, and order processing. For REI, proven products, such as Net.Commerce, DB2® Universal Database™ and IBM Firewall deliver the scalability, reliability and security it takes to reach, sell and service a growing community of outdoor enthusiasts.

The results have been nothing less than astonishing. In the first quarter alone, REI's sites generated online sales that exceeded projections by over 360%. And these e-sales are 4 times the size of those in their brick-and-mortar counterparts. Bottom line, REI is growing profits far beyond its wildest expectations.

REI is just one example of the thousands of e-commerce businesses IBM software has helped build and grow. From Web storefronts to integrating your business systems and supply chains, IBM offers a breadth of software products simply unmatched by anyone. All backed by the know-how and support of IBM and its Business Partners.



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BEFORE DANIEL WILSON arrived at Osrarn Sylvania Inc., he knew he was on a fast train to Burnout City.

His former post at a computer systems manufacturer was rife with project overload and deadline demands that frazzled employees. Users blamed systems problems on information technology workers, who in turn began blaming themselves.

That left Wilson on the verge of becoming a statistic. "I was close to burnout there," says Wilson, who is now a manager of quality tools and methods at the lighting manufacturer in Danvers, Mass.

Wilson felt the symptoms coming on. To be sure, many IT employees work long hours. But Wilson's schedule was monotonous, laborious and "without any apparent break," he says. He'd ply extended hours without recognition from management and without any feeling of accomplishment.

"You just didn't feel you were making any progress," Wilson says. The passion was slipping away, he says.

Dissatisfaction at work led to senseless confrontations with co-workers on everything from projects to new job candidates. The tension from work followed Wilson home. He gained weight from lack of exercise. He became emotionally inflexible and short-tempered with his family — all because of his work relations.

"I got very unprofessional about [work]," Wilson says of his bout with burnout. "I now look back and am ashamed of it."

Until a manager confronted him with his own take on the situation, the light-bulb hadn't gone on in Wilson's mind about the changes. But following that review, which included a raise, Wilson knew he was headed for burnout and

BURNOUT WARNING SIGNS

By Jeffery D. Zbar

needed to make a change. He soon jumped ship to work for a start-up and then a consulting firm, before landing — refreshed — at Osrarn Sylvania, where the environment fosters partnerships between users and IT support.

"Now I'm working a lot of hours, but I feel much more productive," he says.

Seemingly endless workloads and lack of understanding from client groups and senior management can result in frustration and burnout among IT managers and workers, says Thomas W. Ferratt, associate dean for learning,

technology and faculty development at the University of Dayton in Dayton, Ohio, and co-author of *Coping with Labor Scarcity in Information Technology* (Pinnaflex, March 1999). Companies become susceptible to competitor raids, and recruits get jaded opinions from existing workers, who themselves suffer amid heavier workloads from increased turnover, Ferratt says.

At 3M Co. in St. Paul, Minn., aligning work with employees' skills and business needs has helped keep staffers focused and turnover to less than 10%

among its 1,200 IT workers, says Bob Roepke, manager of IT communications consulting and professional development. Ongoing training, competitive salaries, a visible commitment from senior management and support from user groups create relationships that help tether the IT staff to the company in a positive way, Roepke says.

Often, the best way to thwart burnout is to recognize its breeding grounds. At Osrarn Sylvania, a conversion to SAP AG software could have shaken IT. For a department whose people — some with more than 25 years' tenure — were focused on "silos of expertise," the conversion could have created "wholesale change in everybody's life," says Mehrdad Laghaeian, vice president of IT.

Instead, senior managers restructured the company to minimize the impact on staffers. Managers scrapped Sylvania's hierarchical structure and created a flat organization with three core areas: systems architecture and engineering, projects and project delivery, and maintenance of infrastructure. Teams were created to handle each area — with little crossover.

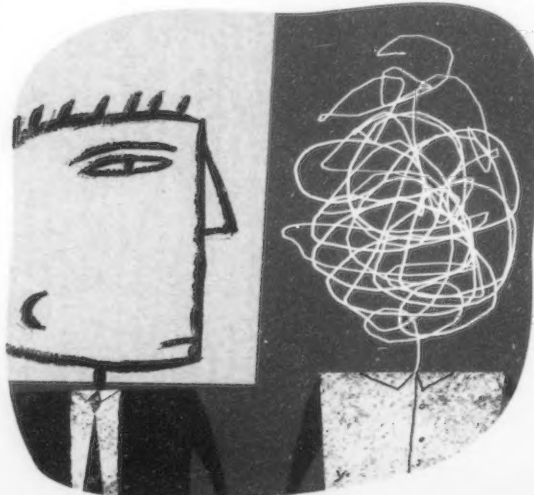
The efforts helped avoid overwhelming people with multiple tasks and kept them focused on the job, Laghaeian says. Assignments are more task-oriented, so they're shorter in duration. There's more flexibility among new assignments, which keeps staffers' focus renewed and fresh, he says. Workers are happy, and thus turnover has never been a problem at the company.

"[Our] concern from the beginning was to design an organization that could minimize the effects of burnout," Laghaeian says. "It's an issue we face all the time. We look out for symptoms of burnout and tackle it in a positive way."

Zbar is a freelance writer in Coral Springs, Fla.

QUESTIONS TO HELP IDENTIFY BURNOUT

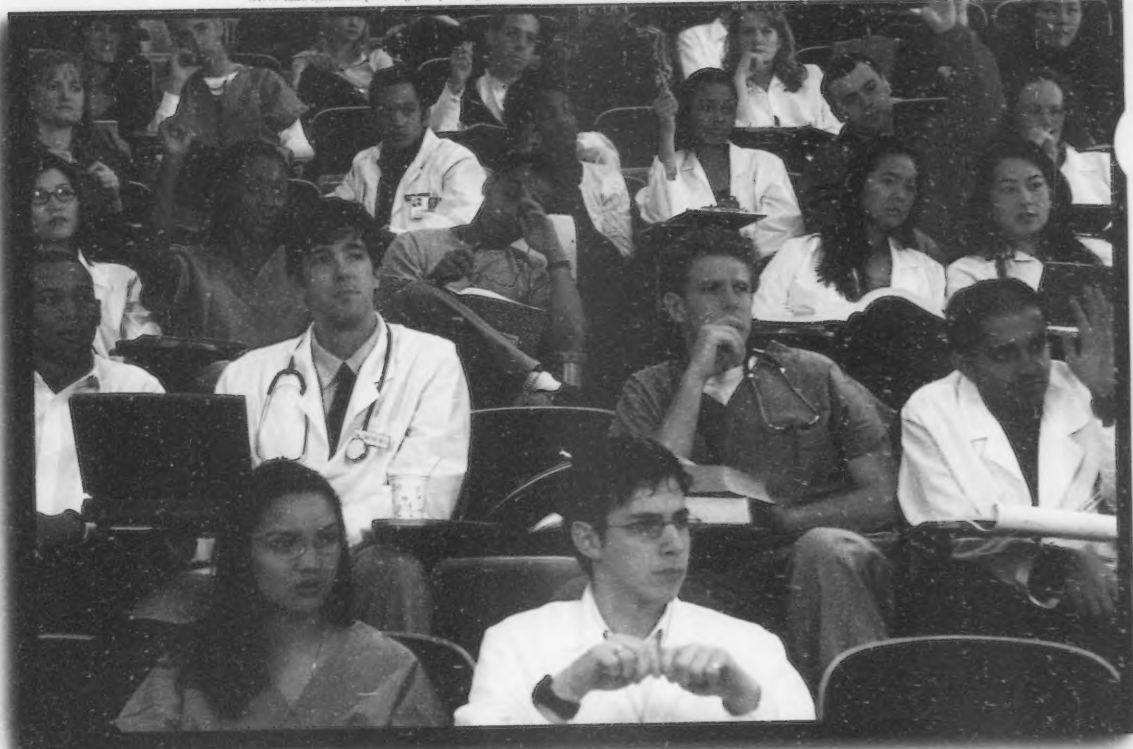
- Are staffers complaining of workloads, especially following a merger or acquisition that has resulted in increased project assignments?
- Is staff turnover and the resulting costs of recruiting and training new staffers higher than normal?
- Have employees lost motivation and interest in work and the surrounding staff? Are they blaming systems failures on equipment or co-workers?
- Have absenteeism, delayed project delivery or internal disagreements risen?
- Have staffers lost their focus on job responsibilities or client issues and instead are problem-solving or "fighting fires"?
- Are staffers requesting more time off or alternative work arrangements to help them balance work and family issues?



TIPS TO COMBAT AND THWART BURNOUT

- Make deadlines attainable. Avoid long stints on single projects. To keep the staff fresh, continually assign new projects and rotate employees among different projects.
- Avoid keeping staff on lengthy stints in product or client support or on-call assignments.
- Keep workers on fewer but larger projects instead of multitasking on many small ones.
- Break the organization into teams, foster networking and partnership among IT and clients and co-locate IT with user groups.
- Give staffers the autonomy to make appropriate decisions.
- Build skills. Offer education and training. This helps prevent staffers from feeling they merely provide support and fight fires.
- Spread high-stress work around; steering demands to skilled workers who have shown they can handle them may lead to resentment.

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FROM CIO TO CEO

CIOs are — at long last — becoming company presidents as technology-driven organizations snap them up. Here's what it takes to get there By Kathleen Melymuka

"AS CIO, I ALWAYS told my people the only acronym I ever cared about was EPS [earnings per share]," says Tom Thomas. "If you have that vision, it's pretty powerful." Powerful enough to lead a company. The former CIO at 3Com Corp. and Dell Computer Corp. recently became CEO of The Vantive Corp., a maker of Web-based customer relationship management software in Santa Clara, Calif.

CIOs have been gaining business smarts for years, and now a handful have gone all the way to the top as CEOs of technology companies and e-commerce businesses. Most of the companies are in the \$70 million-to-\$300 million range, but given that foot in the door, can the Fortune 1,000 be far behind?

Most of these new CEOs measure their tenure in months, so it's still too early to gauge their success, but venture capitalists are betting on their technology expertise and ingrained customer focus. "It makes a lot of sense," says Wayne Nemeth, an associate at The

ner office. "I'm not buying it," says David Foote, managing partner at Foote Partners LLC, a research and advisory firm in Stamford, Conn., that specializes in information technology workforce issues. "CEOs are change agents in a company," he says. "CIOs are change architects. They're more implementational."

That's more the consequence of an outdated business model than CIOs' limitations, counters Ron Ponder, president of Cap Gemini Telecommunications of North America and former executive vice president of operations and service management at AT&T Corp. "We have created an environment where we've forced many CIOs to be confined to that role," Ponder says. "I've been fortunate to put myself in businesses that have allowed me to be more rather than less."

Though he was responsible for 45,000 people (all networks, systems, customer service and product management at AT&T), Ponder says he never got bogged down in technology. "I always make it a point to understand the business end-to-end," he says.

When he was tapped to be CEO of Beechwood Inc., a private company that specializes in software for telecommunications providers, Ponder already knew the customers. He had been one himself, and the rest were his peers in the industry. Ponder did so well as CEO that two years later, Cap Gemini acquired the company and asked him to stay on as president of the telecommunications division.

To be a CEO, Ponder says, "you need to be visionary and [a] change agent and strategic thinker, but you also need to understand the customers and the day-to-day turmoil. You need to have done it."

Thomas has done his share. As CIO, he helped develop Dell's enterprise selling program. As CIO at 3Com, he led the e-commerce initiative responsible for \$1.6 billion in 1998 revenue. When Vantive needed more customer perspective on its board last fall, it invited Thomas to join because "the things that are important to being successful in Vantive are things I'm very familiar with," he says. "I understand the market and where there are strategic opportunities to grow."

The board agreed — adamantly. In April, it asked him to take over as CEO. "Tom's experience with implementing e-business and customer relationship management solutions provides him with a unique and valuable perspective of what the customer wants," says Patti Manuel, CEO of Telicity Inc. in San Jose, who served on the Vantive board at the time.

Today's CIO is in the center of the business universe, Thomas says. "It's the one position other than CEO that you have to have an integrated view of the company." Add the technology perspective and you have a CEO who gets it, he says. "We get that the Internet has opened opportunities for customers. ... We get what these changes are about."

Beyond Technology

Technology vision is a CIO's strong suit, but it has to be backed up with a good business hand. "A glorified project manager is not going to be CEO," says David Lord, former CIO at The Holt Co. and now CEO of spin-off Toysmart.com Inc., both in Waltham, Mass.

The CIOs-turned-CEOs share a range of business experience. As CIO at CSX, Andrews served with the marketing executives of the business units on the strategic planning board, then became president of CSX Technologies, a division developed to market CSX software. "I'd spent parts of my career in finance, planning, engineering, [and] I managed the IT organization as a company inside a company," he says.

At MCI Communications Corp., Lance Boxer started out in engineering, then became president of the data division and finally CIO. At the end of last year,

he moved to Lucent Technologies Inc. as president of its communications software division. Boxer points to his CIO experience as a key to understanding customers. "I can create and deliver a better experience for our customers because of where I've been," he says.

Different Strokes

Former CIOs find that their experience colors their CEO work styles. "The fact that I 'get it' means I'm able to challenge," Lord says. "I'm not being pushed to implement technology; I'm pushing." As CIO at Holt, Lord pushed to position himself in the new world of e-commerce, which allowed him to use his background in finance and his passion for technology. "E-commerce is a bringing together of finance and technology," he explains. "I always felt well equipped to deal in that environment."

Lord put together an e-commerce Web site that soon became so central to the business that then-CEO

So You Want To Be a CEO . . .

Rick Maurer, an Arlington, Va., change management consultant and author of *Beyond the Wall of Resistance* (Bard Press, 1996), offers the following tips to smooth the path from CIO to CEO:

- Be good at technology. That's table stakes.
- Nurture good relationships with executives of the business units and make sure your staffers are listening, not dictating, to their people.
- Learn other parts of the business, from finance and marketing to human resources.
- Know what's keeping CEOs awake at night. Understand the outside pressures on your company and trends in your industry.
- When you think about an IT proposal, wear your CEO hat. Consider approaches and language that will get the CEO interested. If you can't come up with any, maybe it's a bad project.
- Be willing to say, "I don't think we need to be spending money on that right now." — Kathleen Melymuka



SANGA'S JOHN ANDREWS says the Y2K problem has boosted the CIO's importance before boards of directors

Sprout Group, a venture capital firm in Menlo Park, Calif. "Combining CIO skills with a really diligent focus on the customer and the market is a great match."

Bridging the Gap

Former CIOs have led businesses in the past — think Katherine Hudson at Brady Corp. and John Reed at Citigroup Inc. — but they've been considered the exception that proves the rule that CIOs are too techie, too myopic, too tactical and too naive about business.

But as business has become more technology-intensive, CIOs have become more like their business counterparts, and vice versa. "The characteristics that make for a great CIO now are probably very similar to the characteristics that make for a great CEO," says Eric Clemons, professor of operations and information management at The Wharton School at the University of Pennsylvania.

"When you sit in boardrooms [today], it's hard not to be talking about technology and its implications for the business," says John Andrews, former CIO at CSX Corp., a transportation company in Richmond, Va., and now CEO of Sanga International Inc., a \$161 million Java tools and development company in Ponte Vedra Beach, Fla.

Recent events have placed a brighter spotlight on the CIO. "The year 2000 issue has elevated the CIO to a position of great strategic responsibility before the board of directors. It's been a stage for them to showcase their abilities," Andrews says.

But not everyone expects a rush of CIOs to the cor-

Paul Holt asked Lord to take over. "Our business was focusing on the Internet," Holt recalls. "We needed someone who could allow that division to grow and prosper. And it did."

Lord thinks the CIO's business profile will be even higher in the next few years. "The Internet is about to go through a huge consolidation phase, and integrating the companies is going to fall squarely on the CIOs' shoulders," he says.

For all the skills CIOs-turned-CEOs bring, they acknowledge that running a company is different from running IT. "No one should underestimate the role of a CEO," Andrews says. "It is a major step."

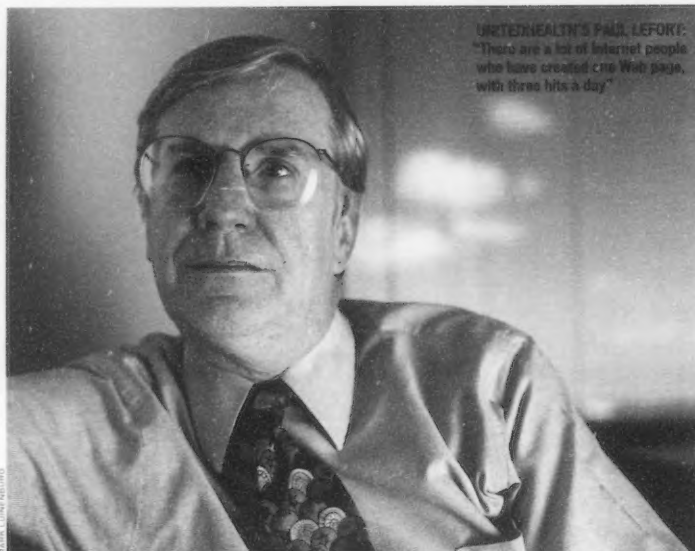
A step that, starting now, more will be taking, says Marc Lewis, head of the corporate IT practice at Christian & Timbers, a New York firm that specializes in CEO recruitment. Over the next two or three years, CIOs will be recruited as CEOs of high-tech and Internet companies, he says. Then they'll move into non-technical companies.

The first wave is already out there, demonstrating that new times call for new people. "If you took 50 old-style CEOs and told them to run a progressive company like Amazon, do you think they could?" Boxer asks. "But top CIOs could. It's a fascinating time." ■

COMPUTERWORLD's
Second
Quarter
Hiring Survey

CONTRACTORS NEED NOT APPLY

IT managers still have healthy hiring plans for the coming months, but the focus will be on full-time staffers who can bring business value to the job. Here's a look at the top areas of opportunity
By Mary Brandel



UNITEDHEALTH'S PAUL LEFORT: "There are a lot of Internet people who have created one Web page, with three hits a day."

TECHNOLOGY may be changing at the speed of light, but the skills that are most in demand are surprisingly familiar. Project management, data modeling, business know-how — surely, those all ring a bell.

The difference is that as we hit midyear, companies are more serious than ever about acquiring employees with those skills, even if it means reactivating training programs and scouring business departments to find them.

And the emphasis is on the word "employee" — contractors won't fit the bill. Although information technology managers have different needs, they seemingly all agree that it's time to invest in permanent staff hires, and stop relying on contract labor.

Fortunately, resources are freeing up as year 2000 projects wind down. But Y2K workers aren't necessarily the right people for the new jobs, so there may be a lot of retraining ahead.

There's still room for contractors, but more so in the technical areas of IT like programming and database administration. Strategic roles and positions requiring deep business knowledge will be reserved increasingly for permanent staff.

The following is a rundown of some of the job titles and skills employers will be seeking in the coming quarter:

E-Commerce

Having the word "Web" on your résumé will certainly turn many employers' heads. But to maintain their gaze, you need more than just front-end Web experience. The truly prized

worker is also experienced in e-commerce-based transaction processing systems.

"There are a lot of Internet people who have created one Web page, with three hits a day," says Paul LeFort, CIO at UnitedHealth Group Corp. But with hundreds of thousands of Web visitors and many e-commerce efforts interwoven throughout the company, UnitedHealth needs more Internet expertise.

Although LeFort would like to find developers who can add what he calls "some flash and dash" to the company's year-old Web site, he's seeking people with about five years' Web experience to work within its integration framework — a middleware strategy that blends older systems with the Web.

UnitedHealth employs about 50 Web developers, but "hundreds and hundreds more" are

working on infrastructure and integration issues, he says.

"In my own experience, 20% of your Web costs are put into the Web page itself; 40% goes into the infrastructure and making sure it can handle the transaction load; [and] the other 40% is interfacing into legacy systems," LeFort says.

Another position that requires specific skills is vice president/managing director of electronic business, says Judy Homer, president of J. B. Homer Associates Inc., an executive-search company in New York. "Anything having to do with content or the infrastructure of the Internet, intranet or extranet — that is the biggest boom happening," she says.

Finding people with those skills is another story. "The people [who] have done it — everybody's pulling at their

sleeves, and their employers want to retain them as well," says Heinz Bartsch, director at Professional Consulting Network, an IT recruiting firm in San Francisco. "It's hard to find them, and it's hard to pull them away."

Because of that, salaries are as high as \$150,000 to \$200,000 annually for someone who has applied Java skills to a successful e-business project, says Vaughn Merlyn, a vice president at The Concours Group, an IT consultancy in Kingwood, Texas. E-commerce project managers and implementers at professional services companies can expect salaries in that range, and the pay for a director-level position can soar to \$300,000, Homer says.

ERP Skills

Like e-commerce professionals, workers in the enterprise resource planning (ERP) field are in demand — and might also encounter elevated expectations of their skills.

Although SAP AG skills "were a ticket to whatever you wanted three years ago, we're seeing some softening on that," Merlyn says. "CIOs and high-level IT managers want to know what business results you enabled. How were you able to use ERP to change business processes and deliver a different kind of result?"

Now that many companies have basic ERP packages in place, they're ready to enter more high-end realms like Web-enabled ERP. "They're not just enterprise systems but interenterprise systems," Merlyn says. "That requires sophisticated Web skills and business skills that are very hard to find."

At the same time, some companies would be happy to find someone with straight ERP capabilities. SAP expertise is a "critical need" at Eli Lilly and Co. right now, according to Sandy Sifferlen, a recruiting manager for IT and engineer-

ing at the \$9 billion, Indianapolis-based company.

Eli Lilly is in the middle of a global SAP rollout. Although the ideal candidate would be one who's been through a successful SAP implementation, "the market is tight, so we're looking at the full spectrum," Sifferlen says.

Data Modeling/Data Warehouse

Data management and data modeling are getting renewed attention as companies get further along in their ERP, e-commerce and data warehousing projects. Data modeling skills got a lot of attention in the early days of relational databases, but many companies never followed through on those projects, Merlyn says.

But the need for information resource management is coming back — especially when companies want to do things like have their ERP systems talk to other ERP systems. "That requires some pretty strong data skills," Merlyn says. Extensible Markup Language also requires an understanding of how data is managed and used across the company.

Data management is one of six core competencies that Minneapolis-based Honeywell Inc. has identified in its IT organization. "Data management is tied to the idea of equipping the organization to leverage

[Our data warehouse candidates] have only been lightly exposed... But their salary demands are high.

DON HARRIS,
BELK STORE SERVICES



the knowledge it has and translate [it] into business results," says Eileen Pinto, information systems/human resources development leader at Honeywell. "It's critical that we have confidence in our data."

The same holds true at Belk Store Services Inc., the IT arm of Belk Stores in Charlotte, N.C. The company's year-old, DB2-based data warehouse provides daily data feeds to individual

stores "so they can make informed decisions based on how certain types of merchandise are being sold," says Don Harris, manager of IT staff development.

But Harris is having a difficult time finding the right data warehouse developer. He says he's interviewed candidates "who have only been lightly exposed, or people who've worked on [data warehouses] since it got started. But their salary demands are high." He said he might train an in-house worker to fill the position.

+8%
Pacific

+9%
Mountain

+12%
West North Central

+6%
East North Central

+6%
Mid-Atlantic

+11%
New England

+6%
East South Central

-9%
South Atlantic

+27%
West South Central

Project Management

"In general, if someone has strong project skills, that's something we really value and continue to keep our eyes open for," says Karen Madison, human resources manager of IT at Corning Inc. in Corning, N.Y. "With our growth, it's important [not only] for people to understand technology, but [to] also have a project management skill set."

Belk is seeking a project manager with the ability to run two large development projects at the same time. "They should have six to eight years of development experience and a couple years in project management," Harris says.

Honeywell's recent imple-

mentation of PeopleSoft Inc.'s ERP applications "will require exceptional project management roles," Pinto says. After the implementation is complete, those managers could move on to jobs in e-commerce "or a variety of areas," she says.

Business Skills

As companies rely more and more on IT to increase their competitiveness, they become adamant that IT professionals possess business know-how and "soft skills" such as leadership traits and the ability to communicate.

"What we're truly looking for are people who can apply business principles to IT," Sifferlen says. "We're very much viewing IT as a strategic center for moving [the business] forward."

Eli Lilly seeks business skills in all new employees, but is now looking for systems analysts with a business bent, Sifferlen says. The growth opportunities are good. "There is an IT professional probably in every part of the company," she says.

Honeywell's future will call for skills "in broad project management roles and business partnership roles," Pinto says.

The renewed emphasis on business skills is part of a larger trend, says Linda Pittenger, president and CEO of People3 Inc., a consulting firm in Somerset, N.J. More and more companies are hiring contractors to fill technical needs and nurturing a business understanding among their full-time (and hopefully, long-term) staff.

"It's more important that the person understands claims

processing, say, than having C++ [experience]," she says. "They can externally buy from a contractor the C++ person."

Pittenger says she's seeing the emergence of five new job titles in the IT/business realm. The first two work hand-in-hand like "Siamese twins," she says. They are the business consultant, who figures out how to apply technology solutions to business strategies; and the applications guru, a "very high-paid technologist" who keeps his finger on the pulse of new technology developments that can lead the company into new strategic areas, she says.

Other new positions requiring business skills are program officer, who's in charge of allocating IT resources; and sourcing manager, whose job is to decide what types of employees are required to carry out the corporate strategy. Finally, there's a position for someone to manage all the relationships with various vendors, she says.

"We need someone who can work with contractors, consulting companies and vendors," says Bill Brannen, director of workgroup transformation within IT at Sears, Roebuck and Co. "We used to deal with one company: IBM. Now, we've got everything from Microsoft [Corp.] to Informix [Corp.] to PeopleSoft, so we need people who can establish relationships, work out contracts [and] look for strategic alliances." ■

Brandel is a freelance writer in Norfolk, Mass.

Wow for Employees! Woe to Contractors!

Second-quarter hiring projections for the coming year show a healthy need for permanent staffers and a dramatic decline in the need for contractors:

| INDUSTRY | NUMBER OF COMPANIES SURVEYED | AVERAGE HEAD COUNT | 12-MONTH STAFF HIRING PROJECTION | 12-MONTH CONTRACTOR HIRING PROJECTION |
|---|------------------------------|--------------------|----------------------------------|---------------------------------------|
| IT consulting | 63 | 38 | +23% | -26% |
| Computer sales/peripherals | 52 | 30 | +19% | -18% |
| Financial services/insurance | 522 | 72 | +13% | -7% |
| Computer manufacturing and related products | 102 | 59 | +13% | -13% |
| Business services (non-IT) | 202 | 26 | +10% | -12% |
| Education | 672 | 18 | +8% | -5% |
| Communication systems/public utilities/transportation | 267 | 47 | +7% | -29% |
| Wholesale/retail | 308 | 23 | +6% | -14% |
| Health care/medical services | 286 | 31 | +6% | -21% |
| Manufacturing (non-hardware) | 856 | 17 | +5% | -12% |
| Government (state and local) | 229 | 32 | 0% | -20% |
| Mining/construction/petroleum/refining/agriculture | 148 | 30 | -11% | -50% |
| Government (federal and military) | 130 | 85 | -24% | -22% |
| Other | 147 | 91 | +7% | -26% |
| Totals | 3,984 | NA | +6% | -12% |

Accrual- vs. Cash-Based Accounting

BY STEVE ALEXANDER

ALTHOUGH financial numbers don't lie, they're subject to different accounting methods that can lead to different interpretations of a company's financial position.

There are two basic methods for keeping track of sales income and the money paid out for expenses: cash accounting and accrual accounting. Typically, businesses with revenue of more than a few million dollars choose accrual accounting to handle the greater financial complexity those companies face.

Choosing the right accounting method can make the difference between an accurate reading of profit and loss and a conceptual figure that leaves you clueless. Accounting can also make the difference between knowing when you have money in the bank to cover an expense and when you don't.

Knowing how much money you actually have on hand might be a good clue as to whether you've budgeted enough to pay expenses between the times when your customers pay their bills.

An information technology manager who doesn't know how to look at the numbers from both accounting points of view risks not knowing when his business is in trouble. Cash accounting will show that there's really no money in the bank or if today's bright revenue picture will be offset next month by heavy expenses. Accrual accounting matches revenue and expenses within a given financial period to avoid surprises.

Suppose you're running an e-commerce Web site. A customer orders \$100 worth of merchandise in January and pays immediately with a credit card. However, in February the customer backs out of the sale by canceling the credit-card transaction — but keeps the merchandise you shipped. You're now stuck with a debt that may take months to resolve through collection agencies or the courts.

Under cash accounting, that

How They Differ:

ABC is an advertising company. If it used the accrual method, it would record the full amount of the sale of ad designs. But if it used the cash method, it would record only the money it has been paid so far.

| ABC CO. • PROFIT AND LOSS STATEMENT | | | |
|-------------------------------------|---------------------|----------------------|--|
| | Accrual Method | Cash Method | |
| Income: | | | |
| Ad Designs | \$23,895.00 | \$11,017.00 | |
| Marketing Research | \$82,016.07 | \$53,336.52 | |
| Online Marketing Income | \$6,859.00 | \$3,300.00 | |
| Packaging Design | \$35,662.89 | \$21,551.34 | |
| Web Site Designs | \$50,535.18 | \$40,035.18 | |
| | \$198,968.14 | \$129,240.04 | |
| Expenses: | | | |
| Advertising | \$5,066.78 | \$4,434.78 | |
| Automobile Expense | \$5,243.54 | \$3,830.14 | |
| Bank Service Charges | \$266.31 | \$266.31 | |
| Independent Contractors | \$9,679.05 | \$8,557.03 | |
| Office Expenses/Supplies | \$16,451.55 | \$14,633.49 | |
| Payroll Expenses | \$63,775.62 | \$63,775.62 | |
| Printing and Reproduction | \$3,792.32 | \$3,792.32 | |
| Rent | \$18,100.00 | \$16,200.00 | |
| Software Programs | \$744.00 | \$0.00 | |
| Telephone/Utilities | \$17,301.45 | \$13,929.12 | |
| Travel & Entertainment | \$1,131.02 | \$3,667.72 | |
| | \$141,551.64 | \$133,086.53 | |
| Total Expenses: | \$57,416.50 | (-\$3,846.49) | |
| Net Income: | | | |

\$100 in income you recorded in January is recorded as a negative \$100 income in February, says Lissa Redmond, president of accounting firm Total Tax Solutions Inc. in Glendale, Calif. That's a simple matter, and it shows your financial standing immediately. But under accrual accounting, you record that \$100 in income in January. When the transac-

tion is canceled, receivables — cash you are owed — increase by \$100 in February to compensate for the lack of payment.

About a year later, after the debt has proved impossible to collect, you record the bad debt as a \$100 expense and reduce your receivables by \$100. The accrual method takes into account when transactions actually occur.

"You can say that cash-basis accounting shows you what you've really got in sales and expenses," Redmond says. "While that's true, cash-basis accounting will not show you the receivables of your business, as accrual will. I strongly recommend that any business be able to view both types of financial reports."

Most IT managers in charge of an e-commerce site don't

Customers paid most of their bills, but not quite all. So cash accounting lags slightly behind.

Total income for the two methods varies because accrual accounting shows everything that has been paid to ABC plus everything that is owed, while the cash method shows only what ABC has been paid.

Not all of ABC's debt has been paid. Under the accrual method, the books showed the full amount owed by ABC at the moment the services were rendered. As a result, the accrual method shows the total amount paid plus the amount still owed. The cash method shows only what has been paid by ABC.

The bottom line couldn't be more different for the two accounting methods. Because other firms paid ABC less than it was owed, the cash accounting method shows the company lost money. The cash method correctly shows that ABC probably shouldn't write any big checks until more of its customers pay up. But accrual accounting shows that ABC is comfortably in the black for the year by matching up actual revenue and expenses.

have to worry about choosing whether to keep the books on a cash or an accrual basis because the company's accounting department makes those choices, says Tony Tortorice, a partner in the global risk management services practice at PricewaterhouseCoopers in Los Angeles.

Although most larger businesses use accrual accounting, an IT manager can still benefit from using software to look at the financial information on a cash-accounting basis because it helps him understand the sources and uses of the company's cash, Tortorice says.

Having both views of the data is important because knowing where the money is can make a big difference in how well your e-commerce business runs. "If somebody sends me supplies, I want to delay paying them as long as I can get away with it. Because I like having free money, it means I don't have to borrow it at the bank," Tortorice says. "On the other hand, I'd like to get somebody who owes me money to pay me sooner because they're using my money to run their business."

There's one more reason to use both views of your financials. Accrual accounting poses risks for the unwary, says Susan Koski-Grafer, vice president of technical activities at the Financial Executives Institute in Morristown, N.J.

"If a technology company sold a lot of products, it could have a great accrued revenue stream [of receivables] that would make it look successful," she says. "But if that company sold those products to shaky, high-flying customer companies that couldn't pay, it could go out of business quickly — because you can't pay your bills with receivables."

Alexander is a freelance writer in Edina, Minn.

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MOREONLINE

For more information on accrual- and cash-based accounting, visit our Web site. www.computerworld.com/more

DEFINITIONS

Accrual-based accounting: Sales are recorded when the sale occurs, no matter when you are paid. Expenses are incurred when you receive goods or services, even though you may not pay the bills for them until a later date.

Cash-based accounting: Sales are recorded when you receive the money and expenses are incurred when you pay the bills.

JOE AUER/DRIVING THE DEAL

Automaker slams brakes on highway robbery

USUALLY, I write about contract wrangles once they're over and done with. Not this time: I have a tale to tell about an unscrupulous software vendor who's now trying to take advantage of a long-standing customer — a major automobile manufacturer.

What's happening is nothing less than an aggressive profiteering attempt. The vendor has tried to collect a \$154,000 "software-upgrade fee" from the manufacturer even though it was totally unsupported by a contract, prece-

dent or even prior notice to this customer. By the way, the original "perpetual" software licensing fee for the package was \$22,000. Fortunately, this besieged customer has a veteran contract manager to do battle with this vendor.

When the contract manager came aboard two years ago, he inherited this 8-year-old software licensing agreement for ZIP code automation software used in billing for the company's vehicle-finance operation. In the original deal, system maintenance was provided for three years at no charge, as was the master ZIP code file subscription fee. An addendum limited the master file subscription maintenance fees

to \$7,500 beginning in the fourth year, with a stipulation that total fees wouldn't increase more than 10% per year thereafter. Over the years, the automaker upgraded the system's CPU many times, and the software vendor supplied new versions — never charging upgrade fees. And nothing in the contract mentioned upgrade fees.

In February, the contract manager notified the vendor in writing that the automaker was upgrading its hardware again and would need software compatible with the new operating system. Imagine how dumbfounded he was when he got a letter telling him the vendor wanted to

charge his company \$154,000. After recovering from severe sticker shock, he checked the agreement and couldn't find anything to justify that fee. Citing a policy change from the previous April (10 months earlier), the vendor said in its letter that it was now charging upgrade fees and that the customer wouldn't receive the software upgrade until it pays. Get the software upgrade until he pays. Here's another point: The customer wasn't notified about the change of policy 10 months earlier. Surprise!

Asked to explain, the vendor cited a clause dealing with "reassignment" of the CPU — a common technique software suppliers use to keep track of

their products. If a company physically moves its CPU, some software vendors charge an administrative fee. It's usually \$250 to \$500 — surely nothing like \$154,000.

After pressure from the contract manager, the vendor sent a letter stating the customer would get a discount because it dropped two of the vendor's other products. The new bill was \$98,000.

The contract manager rightfully balked and dug his heels in. As a result, the vendor then asked for \$49,000, which in itself discredits its first attempt to collect \$154,000.

Enter the vendor's vice president.

The contract manager held firm, wondering out loud how a reputable vendor could treat a customer like this and ignore the actual contract and precedent established between the parties. The vendor VP admitted his legal counsel had pointed out that the contract had some fuzzy areas, but he wasn't going to relent.

The cast of characters has now grown to include inside

legal counsel and outside legal counsel well-versed in computer law. The bottom line: It will cost more than \$49,000 to litigate this unnecessary mess. Replacing the software would cost only \$30,000, but dumping the troublesome vendor isn't an option because of year 2000 conversion. Freezing

billing operations to change software this year would drastically impact the automaker's finance business. Do you think the vendor possibly counted on this?

Or perhaps the vendor counted on the copyright laws, which say the copyright holder has all the rights and we licensees don't have any, except those specifically granted in the license!

It just goes to show we must correctly anticipate all of the rights and flexibilities we will ever need and negotiate them into the deal — from the start!

I'll keep you posted on the outcome when it's resolved. In the meantime, I'd like to hear your reaction, similar horror stories or solutions you've found. ▀



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WORKSTYLES

What It's Like to Work at . . . CountryCool.com

Interviewee: Jennifer Kirk, project manager

Company: CountryCool.com Inc., producers of www.countrycool.com, a community-oriented Web site aimed at country music fans and the country music industry

Location: Technical staff is in Fairfax, Va.; content staff is in Nashville. Number of IT employees: 10 full-time, "plus we use contractors" Number of employees (end users): 14 (technical and content)

Average number of site visitors: About 5,000 unique visitors per day accessing about 20,000 unique page views per day. "The numbers were even higher during Nashville's recent Fan Fair, an annual event

that brings fans and country music stars together. CountryCool.com was the official webcaster for the event."

Dress code: Casual, but no sneakers, T-shirts or blue jeans with holes in them

What about cowboy boots? "No one up here [in Fairfax] wears cowboy boots."

Workday: Roughly 8:30 a.m. to 5:30 p.m. or 9:30 a.m. to about 6:30 p.m. to keep posting live news

What do you see on people's desks? "We all have blue bubble pens with a globe on the top. You unscrew the globe and you have a bubble blower. We have been known to sit around in meetings and blow bubbles."

Must people carry beepers? Cell phones? "A lot of us do. It's not required, but it's a 24-hour Web site, and we're getting so much traffic." Percent of staff that telecommutes: "Currently none, although at least 50% of us work from home at night and on the weekends."

On-site day care? No.

In-house cafeteria/food service? No, but there's a kitchen with microwave, refrigerator and toaster oven.

Free refreshments: Bottled water The one thing everyone complains about: "There are too many Davids here — everyone is a David, and we never know who someone's talking about when they say 'David.'" Office mascot: "Probably a foam rubber monster head that one of our computer scientists has on his desk that he's always playing with. And we all have these teeny little plastic cowboy hats that we wore at our spin-off party — we

just spun off as a separate company from Walcoff Associates April 1." Who's the computer scientist?

"He's the programming guru who knows how to do anything. He is so smart and so amazing that we created a certificate of mass appreciation for him, for 'going above and beyond the call of duty and for being so doggone smart.'"

Little perks: "The bubble pens. We all got CountryCool.com T-shirts. And we also each got a small battery-operated fan that says, 'I'm a Fan of CountryCool.com, The World of Country Music.'"

Last companywide/department perk: "Every Friday afternoon at 4 p.m., we have a champagne staff meeting."

Would employees feel comfortable e-mailing the CEO, Carol Walcoff?

"Oh, yes, yes. She's very open." Quote: "Working here is very interesting. I came from [former parent company Walcoff Associates, a federal contracting agency] where we had a lot of government-related projects, and they were blah, blah, blah. This is an entertainment site, and we're a commercial IT company, and we have so much more freedom. The projects are fun — like webcasting live from backstage at the [Country Music Association] Awards or from Fan Fair. And we get to do a lot of research and learn all the real cutting-edge Web technologies like streaming audio and video. It's also great to work for an IT company that's run by a woman, because IT is typically so male-dominated."

— Leslie Goff

CountryCool.com™
THE WORLD OF COUNTRY MUSIC

Now you can **open** your eyes
and see what the world sees. The Internet
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customers, suppliers—everyone. But with new
rewards come new risks. HP OpenView can
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HEWLETT
PACKARD

TECHNOLOGY

JAVA 2: WORTHY, BUT TRICKY

The upgrade is worthwhile, users say, but only if you upgrade your clients and servers at the same time — and are prepared for some printing problems. **► 56**

EDI LIVES!

Web-based supply-chain collaboration may help some companies bypass electronic data interchange. Others will continue to use it for billing and production data and use the Web for more forward-looking planning with business partners. **► 57**

REAL-TIME MONITORING

3Com's upcoming network and application monitoring tools add Rmon2 probe capabilities at a fraction of the cost of probes. They also feature sophisticated packet capture and analysis capabilities. And it's all accessible via a Web interface. **► 63**

E-MAIL END RUN

Services from My Docs Online and Visto let you post files on a secure server, then dole out access to end users via a browser. That approach skirts slow e-mail-attachment downloads. And did we mention it's free? **► 63**

DEVELOPER TOOLS FOR LINUX

With the recent addition

of MQSeries to its Linux product portfolio, IBM now offers developers nearly all they need to build corporate applications for the free operating system. **► 57**

EMERGING COMPANIES

A Swedish start-up called Cycore offers 3-D modeling for the Web. The technology may be a big draw for online shoppers, but can this laid-back company survive the cut-and-thrust of Silicon Valley? **► 64**

SGI PUMPS UP UNIX BOXES

SGI boosts the graphics performance of its entry-level O2 Unix workstations up to 50% with a new 300-MHz RISC chip. **► 58**

QUICKSTUDY

Shopping online may become a more pleasurable experience once standards are in place for digital wallets. **► 65**

FLASHBACK

In 1975, a couple of college dropouts wrote their own version of Basic and founded a company. Called it Microsoft. **► 71**

EXEC TECH

We review three Internet faxing services. **► 66**

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CAMBRIDGE INTERACTIVE'S Andy Singleton chose IBM's WebSphere

JAVA: ACTION'S ON THE SERVER

JAVA'S FUTURE as a client-side Web technology is cloudy. But the server environment plays to the programming language's strengths and masks its weaknesses. In this week's Field Report, we profile five companies that have each deployed a different Java application server to support a vital application.

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BRIEFS

Oracle Announces Supply-Chain Tool

Oracle Corp. last week formally announced plans to develop new supply-chain planning software, although shipments aren't due until the fourth quarter. An existing Oracle production planning tool will be expanded by adding more advanced forecasting and scheduling algorithms developed by France-based Ilog S.A. Oracle officials said a beefed-up planning package was in the works three months ago (News, March 29).
www.oracle.com

RTS Upgrades Service Application

RTS Software in Waltham, Mass., last week released an upgraded customer service management application with a new self-service module that runs in Web browsers. The Service Suite 3.2 upgrade also has a redesigned user interface and support for remote access on personal digital assistants, RTS said.
Pricing starts at \$350,000.
www.rtssoftware.com

Solomon to Ditch Novell, Pervasive

Solomon Software Inc., a Findlay, Ohio, vendor of financial and business management applications for small and midsize users, has announced its software will be standardized on Microsoft Corp.'s SQL Server 7.0 database starting next January. At that point, Solomon plans to stop new sales of its Solomon IV packages on Novell Inc.'s NetWare and the Pervasive SQL database developed by Pervasive Software Inc. in Austin, Texas.

India's Software Exports Surge

India's software exports climbed 51% to \$2.65 billion between April 1998 and March 1999, an India-based industry group announced last week. The National Association of Software and Service Companies predicted India's software exports will reach \$15 billion by 2003 and \$50 billion by 2008.

Thumbs-up for Java 2 Despite Tricky Upgrade

Platform offers better security, GUI, speed

BY CAROL SLIWA

CORPORATE USERS making an early switch to Sun Microsystems Inc.'s Java 2 Platform are reaping the benefits of its enhanced, policy-based security model, improved Swing graphical user interface and faster performance.

But the early adoption of new technology can bring pain — and indeed, some users have had their trying moments upgrading to Java 2 Platform, Standard Edition, which was known as Java Development Kit (JDK) 1.2 prior to its December release.

Printing has been slow for several customers. And finding upgraded virtual machines on all platforms may be tough.

Thomas Geer, a software engineer at Visa International Inc. in Foster City, Calif., said his team tried to ease into Java 2, testing the server side of its applications before tackling the Swing-upgraded client, which offers the look and feel of a Windows application.

Testing the server was most important because Visa wanted to use Java 2's new policy-based security model so that programmers wouldn't have to manually code system-level

security on an application-by-application basis. Java 2 lets Visa's developers write applications that trigger class loaders to authenticate a user's identity and policy files that specify a user's privileges, Geer said. The policy files are stored on a secured data server.

Upgrade Strategy

But "four months of taking massive lumps" trying to do the full client-to-server migration forced Visa to take an all-or-nothing approach to the Java 2 upgrade, Geer said. Because key changes to core class libraries affected the server and client, both needed to be upgraded to ensure compatibility across virtual machines running on different clients.

"It's much easier to do a whole conversion than to try to piecemeal your way through it," Geer warned. "You're saving yourself a ton of aggravation and time."

First Union Corp. in Charlotte, N.C., upgraded to Java 2 to gain the flexibility to change encryption mechanisms for its online banking applications. But one component needs to run on Sun's Solaris 2.6 operating system and another on Solaris 2.5.1, said Bill Barnett, manager of the Distributed

Object Integration Team at First Union.

Right now, Java 2 is supported in Sun's Solaris 2.6, but Solaris 2.5.1 won't support it until the second half of this year, a Sun spokeswoman said.

IBM users are also waiting. Some said they haven't moved to Java 2 because IBM has yet to make the switch in any of its products or operating systems. And anyone using IBM's new Java runtime environment and development kit to speed Java performance on Microsoft Corp.'s Windows will find that it supports only JDK 1.1.7. A beta supports JDK 1.1.8, but 1.2 support won't come until later.

Daiwa Securities America Inc. found Java 2 applications printed very slowly because the large bit-map files they create take much longer to print than regular printer output files, said Jeffrey Borror, director of information technology.

Blake Connell, Sun's senior product manager, said some developers will see improvement in the Java 2 maintenance release due this month. Further improvement should come early next year in Version 1.3, he said.

Those who have switched to Java 2 said they experienced an overall benefit — not only with the improved security model and graphical user interface, but also in its performance.

Java 2 Platform, Standard Edition

Released in December 1998, new features of Java 2 Platform (formerly known as Java Development Kit 1.2) include:

SECURITY ENHANCEMENTS

- Policy-based access control
- Certificate interfaces (x.509, v3)

ADDITIONAL JAVA FOUNDATION CLASSES

- GUI components (Swing)
- Drag and drop
- Java 2-D application programming interface, with new printing model

PERFORMANCE IMPROVEMENTS

- Memory compression for loaded classes
- Faster memory allocation and garbage collection
- Pluggable virtual machine architecture
- New Just-in-Time compiler

Christopher Dingle, vice president of technology at New York-based 24/7 Media Inc., an Internet advertising company, said switching to Java 2 helped the company cut the processing load on its Sun Enterprise 3500 servers running Solaris 2.6 by 50%. Geer said he's noted socket-to-socket I/O is four times faster than with older versions of Java. ▀

SNAPSHOT

Who's Leading the ERP Race

Percentage of companies within their industry that have ERP in place:

| INDUSTRY | |
|----------------------------|-------|
| Manufacturing | 40.5% |
| Professional services | 26.2% |
| Distribution | 18.4% |
| Utilities | 15.4% |
| Banking and finance | 12.9% |
| State and local government | 12.5% |
| Trade services | 12.3% |
| Transportation | 9.5% |
| Health care | 9.7% |
| Insurance | 7.7% |
| Federal government | 4.0% |

SOURCE: COMPUTER ECONOMICS INC., CARLSBAD, CALIF.

J. D. Edwards, SynQuest, IBM Bundle Software

BY CRAIG STEDMAN

J. D. Edwards & Co., IBM and Atlanta-based SynQuest Inc. last week said they plan to market a combined package of their enterprise resource planning, e-commerce and supply-chain planning applications to manufacturers in industries such as metals and furniture.

The Supply Chain Advantage bundle also includes IBM's RS/6000, AS/400 or Netfinity servers, which will be preloaded with the soft-

ware and installed by IBM's consulting unit. Pricing for the application package starts at about \$1 million. The companies said implementations should take no more than six to eight months to complete.

The package comes with financial, manufacturing and distribution applications from Denver-based J. D. Edwards, SynQuest's production planning and scheduling tools and IBM's Netcommerce software. ▀

Web Collaboration Tools Haven't Replaced EDI

Some firms use EDI links to trade data, but turn to Web for real-time planning

BY CRAIG STEDMAN

FOR Heineken USA Inc., exchanging demand forecasts and other business data with beer distributors via the Internet freed it from setting up electronic data interchange (EDI) links.

But for users such as The Timberland Co. that already have invested in EDI technology, Web-based collaborative planning with customers and suppliers isn't expected to fully replace EDI connections.

Timberland's plan is to mix batch-oriented EDI transmissions with real-time data exchanges over the Internet to meet various needs — and to avoid forcing too much change on the companies with which it does business.

Rapid supply-chain collaboration driven by the Internet "is really the new thing on the horizon. But [EDI] will still come into play in many areas of our business," said Yusef Akyuz, vice president of information services at Stratham, N.H.-based Timberland.

Timberland this summer plans to launch a small number of Web-based collaboration pilot projects using software from Manugistics Group Inc. in Rockville, Md.

Interactive Goal

The goal is to use the technology to work more quickly and interactively with retailers on plans for promotions, advertising and new product introductions, Akyuz said.

He noted that Timberland, a maker of boots and other footwear and clothing, already relies heavily on EDI to automate its "routine order management and accounting activities."

For example, purchase orders and invoices are exchanged with retailers via EDI transmissions. But the structured communication supported by EDI is neither flexible nor fast enough to handle collaborative planning, he said.

However, Akyuz said he sees no reason to give up on EDI for the basic business-transaction end of the data-exchange spectrum.

AlliedSignal Inc.'s avionics unit isn't planning to turn its back on EDI, either, although it is starting to test Internet-based collaborative planning software developed by Ottawa-based WebPlan Inc., among other vendors [News, June 28].

EDI setups are too expensive for the thousands of small, custom-design shops that supply components used in the radar systems and other products made by AlliedSignal Avionics & Lighting, said Ken Vlach, vice president of integrated supply-chain operations at the



TIMBERLAND'S YUSEF AKYUZ: Rapid supply-chain collaboration driven by the Net is "the new thing on the horizon"

Chain Links

Supply-chain collaboration software recently announced includes:

COLLABORATIVE FORECASTING and planning tools from Manugistics Group Inc., Logility Inc., WebPlan Inc. and I2 Technologies Inc.

SUPPLY-CHAIN ANALYSIS and performance-measurement packages from VIT in Palo Alto, Calif.

PRODUCT DATA EXCHANGE applications from Agile Software Corp. in San Jose

Olathe, Kan.-based operation.

Web-based data exchange is a much better fit for those companies, he said.

AlliedSignal uses EDI to communicate with some of its bigger suppliers, "and I'm not going to require them to change," Vlach said. "Web browsers is the world we're going to, but I'm going to try not to disrupt my supply chain."

No Links

On the other hand, Heineken USA didn't have any EDI links in place when it began looking to do automated order entry, collaborative sales forecasting and inventory planning with the 450 distributors that sell its beer.

Heineken examined EDI as a means to that end, but the technology just wasn't interac-

tive enough to do the job, said Andy Thomas, vice president of operations planning at the White Plains, N.Y.-based company.

Asking distributors to install new systems to run EDI setups also would have been "a big burden" because Heineken has only a 2% share of the U.S. beer market, Thomas said.

Most of the distributors work mainly with the major domestic brewers, not Heineken, he said. As a result, Heineken instead decided to develop a Web-based system built around supply-chain planning software from Logility Inc. in Atlanta.

The system was rolled out late last year and is now Heineken's primary method of doing business with distributors, Thomas said. ▀

More Tools for Linux Developers Emerge

IBM announces MQSeries for Linux; Cygnus unveils graphical interface

BY DAVID ORENSTEIN

Two key tools for developers at corporations that use Linux were announced at the recent PC Expo in New York.

IBM announced that a beta version of its MQSeries messaging middleware, which is used to integrate corporate applications and data from various sources, will be available for Linux later this summer.

With the addition of MQSeries to its Linux product

portfolio, IBM is giving developers much of what they need to build corporate applications for the open-source operating system, according to analyst Stacey Quandt at Giga Information Group Inc. in Cambridge, Mass.

"It was a significant missing ingredient," she said.

IBM's Linux offerings include the DB2 database, the WebSphere application server, the VisualAge Java develop-

ment tool and a Java virtual machine.

The second tool for Linux is Code Fusion from Cygnus Solutions Inc. in Sunnyvale, Calif., which provides a graphical interface for working with Java, C and C++ code. Available next month, it will cost \$299.

Code Fusion caught the eye of Noah Ternullo, a systems engineer at Lockheed Martin Corp. Federal Systems in Oswego, N.Y.

The interface could help colleagues who are accustomed to working in Windows maintain their productivity level when in Linux, Ternullo said. ▀

BRIEFS

SAP Adds More Vertical R/3s

SAP AG recently said a version of its R/3 application suite tailored to publishers, broadcasters and other media companies will be upgraded this month with new ties to the German vendor's data warehousing software. The SAP Media package will have expanded language support and the ability to manage sales of online advertising for users who operate Web sites.

SAP also said it's now shipping a version of R/3 for professional services firms.

www.sap.com

Psipenta Rolls Out Logistics Packages

Psipenta Software Systems GmbH, a German vendor with U.S. headquarters in Westwood, Mass., recently said its line of applications for midsize manufacturers is being expanded to include warehouse management and logistics packages that run on Unix and Windows NT servers.

Pricing for the packages starts at \$70,000.

www.psipenta.com

Oracle8i Lite Ships

Oracle Corp. announced that starting this week, Oracle8i Lite, its Internet platform for mobile computing, can be downloaded for free from its Web site.

www.oracle.com

Short Takes

ONYX SOFTWARE CORP. in Bellevue, Wash., (www.onyx.com) and Burlington, Mass.-based CONJOIN INC. (www.conjoin.com) recently announced Web-based portal applications aimed at sales and marketing users. Onyx Enterprise Portal is set to ship in the third quarter, with pricing starting at \$65,000 for 10 users. Pricing for Conjoin's FieldFirst, available now, ranges from \$60,000 to \$120,000. . . .

QUEST SOFTWARE INC. (www.quest.com) in Newport Beach, Calif., released Instance Monitor, a monitoring and diagnostic tool for ORACLE CORP. databases. Server-based pricing is available.

BRIEFS**AMD Ships 3-D Embedded Chip**

Advanced Micro Devices Inc. last week announced an embedded processor with 3DNow and MMX technologies. The AMD-K6-2E targets embedded applications that need high performance with low power use, according to the Sunnyvale, Calif.-based company.

A standard-power 300-MHz configuration costs \$59 in quantities of 100.

www.amd.com

Intel Motherboard Enables 3-D Apps

Intel Corp. last week announced its CAB10 motherboard. The CAB10 includes the Celeron processor and incorporates the company's 810 chip set, which enables high-performance 3-D applications. It also provides audio capabilities for low-cost PCs.

Pricing ranges from \$110 to \$145. www.intel.com

New Vaio From Sony

This month, Sony Electronics Inc. plans to ship the Vaio F290, a notebook computer with a 15-in. display and digital video editing capabilities. It weighs less than 7 lbs., is about 1.6-in. thick and supports dual battery operation. The system offers a 400-MHz Mobile Pentium II processor from Intel, a 6.4G-byte hard drive and digital video disc movie playback, according to the San Jose, Calif.-based company.

The notebook costs about \$3,500.

www.sony.com

Data General Unveils Eight-Way Server

Data General Corp. has introduced the AV8900, an enterprise server that supports up to eight 550-MHz Pentium III Xeon processors from Intel. It offers up to 2M bytes of Level 2 cache, up to 16G bytes of protected memory and a rack-mount chassis, according to the Westboro, Mass., company.

Pricing for the server starts at \$20,000.

www.dg.com

HP, NEC to Develop Net Protocol Servers, Software

Telecom deregulation pushes creation of voice-based applications

BY MICHAEL DREXLER

UNDERLINING the emerging trend of Internet-based voice and data communications, Hewlett-Packard Co. and NEC Corp. last week said they will jointly develop servers for companies running advanced IP-based applications.

Under the deal, Japan-based NEC will adopt HP's OpenCall software platform for building and running voice-based applications over public switched telephone networks and IP-based data networks, officials said.

NEC will offer the technology on its NX7000 series of

Unix-based servers.

The OpenCall-equipped machines initially will be aimed at telecommunications carriers and Internet service providers.

Competition

Bernard Guidon, vice president and general manager of HP's Communications Industry Business Unit, said deregulation in the telecommunications industry worldwide is putting competitive pressure on traditional telecom carriers and providing opportunities for new IP-based services.

Guidon pointed to an influx of competition that is expected to hit Japan in coming years following the breakup of

Nippon Telephone and Telegraph Corp. (NTT), Japan's dominant telecommunications company.

On July 1, NTT was divided into three companies under one holding company.

"IP networks are going to dominate the telecommunications infrastructure in the future," Guidon said. Communications applications that will be run over the new servers range from IP call centers to

Internet sites where a user could click an icon to make a phone call, he added.

NEC servers equipped with OpenCall will be available on a trial basis next month and will ship in volume by March of next year, according to NEC officials.

OpenCall is used by a range of network communications companies, including Cisco Systems Inc., Nokia Corp. and Nortel Networks, according to HP. ▀

Drexler writes for the IDG News Service in Tokyo.

SGL Boosts O2 Workstations

New CPU works with Irix software

BY JAIKUMAR VIJAYAN

Silicon Graphics Inc. has boosted graphics performance of its entry-level O2 Unix workstations by up to 50% with a new 300-MHz RISC chip from Quantum Effect Devices Inc. (QED) in Santa Clara, Calif.

The QED RM5200 CPU is a second-generation MIPS RISC 5000 processor that's fully compatible with existing appli-

cations based on SGI's Irix operating system, according to SGI.

Systems based on the chip will have a starting list price of \$7,495 and include 4G bytes of disk space and 128M bytes of memory — double the memory that was previously available for the same price.

Current users of Mountain View, Calif.-based SGI's 200- and 150-MHz R5000 chips can do board-level upgrades to the new processor for \$1,495.

The system and the upgrade boards are available immediately, according to SGI. ▀

IDC: Smart Phones Drive Japan's Handheld Market

BY MICHAEL DREXLER
TOKYO

Bucking Japan's lingering recession, shipments of handheld computing devices last year jumped 24.3% to 1.42 million units over 1997 figures, as strong sales of smart phones drove demand, according to a report released here last week.

E-mail and e-commerce features on smart phones (phones that can send and receive data as well as voice signals) proved to be a big attraction: Smart phone unit shipments jumped 86.3% last year to 323,200 units, according to a report from IDC Japan Co., an arm of Framingham, Mass.-based International Data Corp.

The market research firm predicted smart-phone growth will remain strong, with unit shipments increasing 116% this year and 98% next year.

Analysts said Japan is a bellwether for trends in mobile computing. The country is a hotbed of mobile computing; diminutive computers and mo-

bile phones have been popular there despite a recession that in recent years has cut into sales of PCs. ▀

Drexler writes for the IDG News Service in Tokyo.

SCEPTRE FLAT-PANEL DISPLAYS



At the recent PC Expo in New York, show-goers saw a plethora of new display devices.

Sceptre Technologies Inc. announced its new line of LCD flat-panel displays.

The Sceptre ST15, shown here, features weight and thickness that's about 50% less than comparable LCD panels, according to the City of Industry, Calif., vendor. It weighs 6.5 pounds and measures 13 by 13 by 4.9 inches. The monitor can be flush-mounted and has optional touch-screen capability.

Prices range from \$1,099 to \$1,199.

www.sceptre.com



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www.intershop.com/working

E-Commerce and the Internet are

To draw and retain customers in the heated health insurance field, Capital Blue Cross must offer competitive insurance plans and services. Plumbing equipment maker Kohler Co. had to rein in the costs of purchasing industrial supplies. Sports apparel maker Nike Inc. had to improve inventory forecasting to make up for a huge profit loss in 1998.

These three organizations have something in common: the Internet. They, like thousands of other companies, are tuning in and logging on to the reality of conducting business today: electronic commerce.

The boom in Internet-related business has transformed the way consumers buy products and how corporations operate, as enterprises of all sizes use the Web to interact with trading partners, suppliers and customers. Increasingly, companies see the Internet as a vehicle for selling, buying and distributing goods and services globally in an ever-expanding electronic supply chain

bound by neither geography nor time.

Opportunities in e-commerce are vast. While the dynamic nature of the Internet makes concrete Internet usage figures hard to nail down, a recent study estimates that all U.S. Internet-related business generated revenues of \$301.4 billion in 1998 and expanded at a compound annual growth rate of 174.5% from 1995 to 1998. That rate is especially astounding when compared with 3.8% worldwide average economic growth and 2.8% U.S. gross domestic-product growth during the same period. The report was funded by Cisco Systems Inc. and was conducted by researchers at the University of Texas Center for Research in Electronic Commerce (CREC).

The study pegs worldwide e-commerce revenues at \$101.9 billion, which comes close to the estimate of \$111 billion for global e-commerce revenues in 1998 from market research firm International Data Corp. in Framingham, Mass.

Keeping the E-Commerce Customer

In the world of e-commerce, it's not so easy to win and keep customers. Just ask Ted DellaVecchia.

As senior VP and CIO with Capital Blue Cross, an insurance company in Harrisburg, Penn., DellaVecchia can't just place a Web front-end onto a sales force automation application and wait for customers to log onto

CBC's Web site. To ensure that CBC's 1.4 million customers in central Pennsylvania have simple access via Internet browsers to the firm's most timely products, DellaVecchia must cleanse, transform and move enormous amounts of information from back-end legacy mainframe computing platforms to a more customer-friendly Web environment.



Electronic shopping carts are effective. . .and don't get stolen.

Web Software Bolsters Firms' Buying Power

It's not cheap, but companies are reaping huge rewards by deploying Web-based procurement systems to automate the purchase of non-manufacturing products and services.

The software can cost from anywhere from \$200,000 to \$2 million, and consulting services range from \$5 to \$10 for every dollar spent on software, analysts estimate. But companies using the software don't mind the high price tag. Plumbing equipment manufacturer Kohler Inc., based in Kohler, Wisc., uses Web-enabled purchasing software to manage the \$50 million it spends annually on industrial supplies. Within six months of integrating TrustedLink software from Atlanta-based Harbinger Corp. with SAP's R/3 ERP software on the back end, Kohler lopped \$5-\$25 off the cost of processing each transaction, says Tony Hess, the company's supply chain facilitator.

MasterCard International, in Purchase, N.Y., has realized even more dramatic cost-cutting, operating

Elekom Procurement software from Clarus Corp. in Atlanta to save \$10,000 per month on expenses for office supplies, computers and software, according to global purchasing VP Jim Cullinan. The company has also dropped the cost of processing each purchase order from \$125 to \$40.

Buyer-side procurement software is a growing segment of the business-to-business e-commerce market.

Killen & Associates, a market research firm in Palo Alto, expects sales to reach \$725 million next year, up from \$405 million in 1998. The software, which ERP vendors such as Oracle, SAP and PeopleSoft provide as well, enables companies to centralize

the purchase of items not used to manufacture their products, automate and cut the costs of purchasing processes, and arrange volume discounts with vendors. Web-enabled procurement software facilitates online purchasing by enabling users to access catalogs from their desktops via an Internet browser.

Integrating Web-based procurement software with

ERP systems presents technical challenges, but change management issues can be even more grueling. Overhauling established relationships between purchasers and vendors can be difficult, especially when the new supplier may be thousands of miles away, says Hess of Kohler Plumbing. However, good service and competitive pricing tend to convert even those buyers most adverse to change, he notes.

Vertical selling chains are also a popular area in electronic procurement. Buyers click onto these interactive e-commerce sites to obtain the best sources of supplies for manufacturing finished products. For example, Vipar.com enables heavy truckers to make deals with distributors of brakes and truck suspensions. Buildnet.com and VerticalNet.com provide contractors and industrial buyers, respectively, with similar purchasing opportunities.

Buyer-side procurement software vendors are getting into this segment also, with firms such as Harbinger providing portals that link buyers of their particular automated procurement software with supplier networks. Analysts expect that there will be 10,000 such portal sites in a few years.

Buyer-side procurement software is a fast-growing part of the e-commerce marketplace.

Transforming Companies

But this estimate dwarfs other projections. For example, Forrester Research Inc., a market research firm in Cambridge, Mass., estimated that U.S. business and consumer e-commerce would "only" reach \$50.9 billion in 1998. In addition, the CREC report notes that in the past five years, the "Internet Economy" measures up to traditional business sectors such as automobiles (\$350 billion), telecommunications (\$270 billion) and energy (\$223 billion).

Of particular interest are forecasts saying that e-commerce sales revenues in the U.S. will expand to between \$580 billion and \$970 billion by 2002, according to the Giga Information Group, a market research firm in Cambridge, Mass. Total economic impact from other Internet efforts, including customer service, procurement and Web-based

marketing, will bring in even more profit for U.S. businesses.

With such potential, firms of all sizes are Web-enabling their business applications to reduce the costs of doing business, to increase revenues and to enhance relationships with customers, suppliers and strategic partners. For example, early implementers of e-commerce report that running order-management operations on the Web cut the costs of processing orders from \$8-

Companies are logging on to the reality of conducting business today: e-commerce.

\$25 per order down to \$1 and as little as 3 cents, according to Erica Rugulies, e-commerce analyst with Giga. Organizations that operate Web-based customer-support systems tied to back-end business systems can break even after the second year of operation and save up to 40% in customer-service costs by the third year, she notes.

Satisfied is a Tough Job

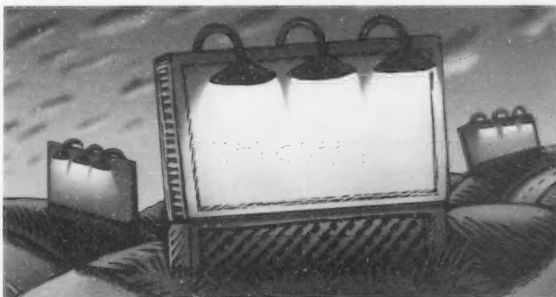
The Internet is quickly becoming a key component of many firms' customer relationship management (CRM) strategies. "We use the Web to enhance the value we deliver [to customers]," says Stephen Aldrich, senior director for corporate marketing and technology with Cambridge Energy Research Associates, an energy research firm in Cambridge, Mass. The Web provides "better information about who our customers are and what they value from us. If you understand what someone needs, you're able to provide it."

Vendors from all points on the enterprise application spectrum are targeting the CRM market with Web-based products. CRM suppliers such as Siebel Systems, Clarify Inc. and Vantive Corp. sell software that supports customer-service functionality through the Web, phone, fax and e-mail. The concept is to provide companies with a single, consistent solution by which they can track customer data through all customer "touch" points, and let consumers place orders, ask for service and check their account status online.

With the the CRM market growing so fast,

it's no wonder so many suppliers are rushing into the Web-enabled customer support field. Boston-based AMR Research Inc. estimates that CRM revenues will grow from \$1.2 billion in 1997 to \$11.5 billion in 2002.

More to the point are the benefits for businesses. Fourteen months after switching on its Web-based customer-service site in 1997, KeyCorp, a financial services company in Cleveland, realized a 360% return on its Web investment, said senior VP Troy Thomas.



E-commerce is changing the landscape of selling to customers.

Still, Web-enabling customer support operations is no slam dunk. In addition to tying CRM applications to the Web, companies must link them to other systems as well. To track their accounts, for instance, customers must be able to tap into information residing on back-end ERP systems that run financial, invoicing and ordering applications.

The Web Expands the Supply Chain

Collaborating with suppliers, business partners and customers in a "universal supply chain," extended beyond a corporation's borders by e-commerce, is both a growing trend and an ongoing challenge. In fact, analysts and company executives blame a drop of almost \$400 million in Nike Inc.'s profits from 1997 to 1998 on problems with inventory forecasting—a critical cog in any manufacturer's supply chain.

Nike, a \$9 billion manufacturer of sports apparel based in Beaverton, Ore., is hardly alone in needing to hurdle the technical, organizational and cultural obstacles that abound when companies seek to use the Web to extend their supply chains beyond their own walls. All such potential hazards occur together and require unrelenting concentration from supply chain managers, says Ken Harris, the CIO at Nike's Beaverton site.

Many corporations use software from suppliers such as i2 Technologies Inc., Manugistics Inc. and Logility Inc., to move products from suppliers to manufacturers to distributors to customers in a uniform manner. The SCM market is robust, with AMR Research, a market research firm in Boston, forecasting that SCM revenues will jump from \$2.6 billion in 1998 to \$3.9 billion in 1999.

Organizations are also connecting their partners and customers electronically into their supply chains and ERP operations to cut inventories and reduce operational costs. They use those extended supply chains to share data about production schedules, inventories, pricing, sales forecasts, and tracking and tracing orders and shipments.

In fact, experts say that the Internet will play a key role in companies' supply chains for some time. Web-enabled supply chain planning will have an enormous impact on the ERP and SCM markets "for the next 12 months," says Andrew White, VP of product strategy with Logility in Atlanta.

Much of the media hype surrounding e-commerce revolves around the 64.2 million U.S. adults currently surfing the Internet from home and/or work (according to the Spring 1999 CyberStats report from Mediarnk Research Inc., a New York supplier of multimedia audience research).

But the real action takes place in business-to-business e-commerce. Corporations have to recognize that consumers can swiftly move from Web site to Web site seeking the best price for almost any type of information, product or service, because the Internet empowers consumers to demand 24 x 7, personalized, one-to-one relationships with their merchants. Suppliers must meet those needs or risk losing their customers' business. The e-commerce bottom line: Competition is only a mouse-click away.

The stories in this report were written by Emily Kay, who writes about technology as a principal with Choice Communications, an editorial consulting firm in Chelmsford, Mass.

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Real-Time Monitoring Tool Will Identify True Culprits

3Com app to add Rmon2 capabilities to interface cards at fraction of probes' cost

BY SAMI LAIS
SANTA CLARA, CALIF.

WITH 3Com Corp.'s DynamicAccess Network Performance Manager (NPM) 2.0 due by summer's end, the company has found a good reason to bring intelligence to the network interface card.

Its DynamicAccess LAN Agent 2.0 software resides on each interface card in client/server systems that run Microsoft Corp.'s Windows 95 and 98 or Windows NT 4.0.

There, the agents act as network probes. Via the LAN agents, NPM 2.0 collects aggregated Rmon/Rmon2 (Remote Monitoring) data and uses real-time monitoring tools to graphically depict application, server and network performance metrics.

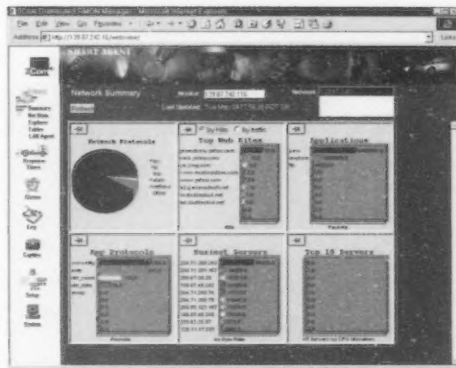
For example, a graph comparing network and application response time for a specified period might show application response times spiking and setting off alarms while network latency levels remain well within normal levels.

The help desk would know with a glance at the graph that the problem wasn't with the network and could hand off the problem directly to the proper maintenance personnel.

Cost Is Key

The capability isn't unique, said John Freeman, an analyst at Current Analysis Inc., a consultancy in Sterling, Va. NetScout Systems Inc. and NetReality Inc., for example, both have applications that perform the same function.

"However, take a look at the cost," Freeman said. "NetScout and NetReality are stand-alone probes that cost several thousand [dollars] each, and you'd need one on each subnet." With between 15 and 20 sub-



3COM'S NETWORK PERFORMANCE MANAGER 2.0 can depict specific application server and network data with real-time graphics

nets typical for an enterprise, the price for the capability rises quickly, he said.

The new version of NPM 2.0 works with non-3Com cards

that run LAN Agent 2.0, but drill-down data is available only on 3Com cards running the software, according to Jon Shalowitz, a product manager

at Santa Clara, Calif.-based 3Com.

Also useful is the packet capture and analysis capability. "DynamicAccess can tell not only that it's an application such as SAP, but a SAP query within a particular type of transaction," Freeman said. "To do that, the code has to be readable. To make it readable, you have to define it. Which means you have to first go look at the SAP application. It's not a big deal — it would take a couple of days maximum. But multiply that by hundreds of times for the hundreds of applications, and it becomes a major load."

Although the aggregated data is usable by any Rmon-compliant network management tool, DynamicAccess comes with a Web interface that lets managers do real-time, on-the-fly management from anywhere on the network, Shalowitz said.

DynamicAccess NPM 2.0 runs on Windows NT 4.0. It will be priced at \$10,995 per management server, each supporting up to 3,000 clients and 128 subnets. LAN Agent 2.0 will be free on 3Com interface cards and will cost \$50 per seat for non-3Com cards. ▀

Web-Based Services Ease Mobile Workers' E-Mail Woes

Access to attachments at common server

BY MATT HAMBLIN

If your company's road warriors are frustrated by the hassles of downloading e-mail attachments or worried about accessing Web documents on their handhelds, new Web-based services may help.

Even at large corporations, such services may prove a viable alternative because of the rising cost of e-mail software and the difficulty of getting all types of devices connected to the corporate server.

My Docs Online, a free service from Naples, Fla.-based My Docs Online Inc., lets users post up to 20M bytes of files on a secure server. Then, anybody with a browser and password to the files can access the material via the Internet.

John Greenstreet, marketing director at Alarm-It Distribution Inc., a Baltimore-based alarm wholesale company, said

his company began to use My Docs Online three months ago to post software upgrades from alarm manufacturers. Alarm installers in the field can then access those updates on the Web and download the new code to customers' security systems.

No Limits

"I've found it a real convenience for the larger files," Greenstreet said. Certain Internet service providers limit the size of an e-mail attachment to 1M byte in size, which is too small for some alarm upgrades, he noted.

My Docs Online allows access to files of up to 20M bytes in size; the files are password-protected and accessible for up to a week.

Analysts said that although the My Docs Online approach is in its infancy, it could offer a

sound alternative to companies trying to avoid expensive upgrades for messaging software such as Lotus Development

to Corp. in Mountain View, Calif., offers a service similar to My Docs Online's. Visto's product is also free.

"The ease of use, security and general cost for these Web-based products might be far, far less than actually installing software clients and other things," said Stefan Smith, an analyst at Dataquest in San Jose.

"You expect corporations to want to retain control over their servers and systems, but some realize it's pretty expensive to do when you have a large IT staff," Smith said.

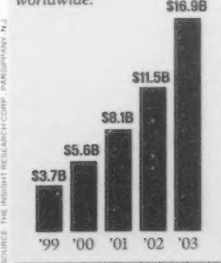
Smith and Spencer Reiss, an analyst and editor of "New Economy Watch" in Housatonic, Mass., said companies may also be seeking alternatives to e-mail attachments that could be infected with viruses.

Smith said he expects My Docs Online to market its services to Internet providers, which will then sell them to large businesses. ▀

SNAPSHOT

ATM Equipment Sales Ascend

Asynchronous Transfer Mode equipment sales forecast worldwide:



SOURCE: THE INQUIRY RESEARCH GROUP, SAN JOSE, CALIF.

It's pretty expensive [to retain control over servers and systems] when you have a large IT staff.

STEFAN SMITH,
DATAQUEST

Corp.'s Notes or Microsoft Corp.'s Exchange, which are licensed by each client and require installation.

Another small company, Vis-

Cycore's 3-D Vision

Software creates interactive product models that are user-friendly

BY CYNTHIA MORGAN

FIRST rule of salesmanship: Get the customer involved. That's a tall order on the Web, which too often is a passive medium like television.

Cycore Computers may fill at least part of that bill. The Swedish start-up has developed Cult 3D, a software package that creates interactive 3-D models that customers can play with online, using relatively small bandwidth loads and far less expertise than normally needed for 3-D animation.

Cycore embraces a unique Internet licensing model that could attract independent developers and boost worldwide distribution. Instead of buying the software up front and hoping you get your money's worth, Cycore gives it away. It charges only for success; you simply pay a license fee for models you distribute.

Generating accurate, 3-D

models is one of the tougher tasks in graphics. Giving those models independently moving parts makes the process even more complex, sometimes requiring hours of very skilled—and expensive—labor with highly specialized software. And finished models are too big to be viewed easily on a public commerce site.

3-D models allow customers to "handle" a product online.

The models are highly compressed and generally take 20K to 200K bytes online. They can be viewed from any browser that supports the Cult 3D plug-in, including Microsoft's Internet Explorer, Netscape's Navigator and Opera Software A/S's Opera browser. The models can be viewed on several operating systems, including Windows, Macintosh, BeOS and many Unix platforms. They support compressed sound files and don't require special hardware to play back.

Cult 3D users can generate models from the original com-

puter-aided design drawings used to manufacture the products, or by building them in Cult 3D's workspace. Models can also be imported from most popular 3-D modeling packages, so designers can reuse already-created models.

Cycore recently signed a deal with a Belgian 3-D image acquisition specialist, Eyetronics (www.eyetronics.com). Eyetronics' ShapeSnatcher software system builds 3-D models from film or digital-camera photos. Users can take a snapshot, generate the 3-D model and import it into Cult 3D to add interactive features.

Web developers can add interactive features to completed models—buttons that depress with a click, LCD screens that fill with text at a keypunch and so on—using the application's Java-based graphical tools or Java programming. The animated models can be embedded in an HTML document; Cycore will support embedding them in Adobe Acrobat files in the near future.

Customers can use Cult 3D-created models free of charge off-line. Cycore charges a license fee of \$3,600 when the

model is first published on a public Web site, but users can freely distribute the model after that. A manufacturer, for example, might build a model and license it once, then deliver it to e-commerce retailers as an additional sales tool.

Cycore pays developers a 30% commission on each published model as an incentive and offers site licensing schemes for companies that need to build many models in different product lines.

Next move: CEO Bengt Starke says the company is looking for easy ways to let webmasters add background information to the models.

"You look at the model, click on a component and see a window with a part number, or a list of stores in your area with current prices for that product," says founder Jerry Petterson. "Now that is the way e-commerce should be."

Top 100 Deadline

Entries for *Computerworld's* Top 100 Emerging Companies close July 16. Winners will be featured in a special year-end supplement. To nominate your company, fill out the form at www.computerworld.com/emerging.html.

the buzz

STATE OF THE MARKET

Cycore isn't the only company that's realized there's gold in Web minimodels. 3-D and virtual-reality developers are jumping in.

MetaCreations Corp.

MetaCreations has long been the darling among users of Adobe Systems Inc.'s Photoshop and Autodesk Inc.'s Kinetic 3D StudioMax and is tight with Apple Computer Inc. It has price and fame on its side with the release of Canoma, a \$495 tool to build 3-D Web models from digital photos. It doesn't generate models from computer-aided design drawings the way Cult 3D does, but skilled users can probably manage that from its other 3-D tools. If MetaCreations drops the learning curve and raises compression levels, it could give Cycore its biggest headaches.

■ MetaCreations
Santa Clara, Calif.
www.metacreations.com

Not Exactly Child's Play

Play Inc. has an impressive legacy; its founders have been involved in just about every successful effort to bring video editing out of the stratosphere and onto the average desktop. The company owns Snappy, which turns any video output into a digital camera, literally revolutionizing the video industry. Play announced Amorphium, a \$150 simple 3-D package, with some Cult 3D-like features. The package lacks Cycore's grab-and-go ease and is missing the low-bandwidth compression tools that make Cult 3D so Web-centric. But if Play wants this market, its rapid development history and aggressive pricing will be hard to beat.

■ Play Inc.
Rancho Cordova, Calif.
www.play.com

Behind the Curtain

Iceland-based Oz.com is an 8-year-old firm that has its fingers in a lot of buzzword pies: IP telephony, lightweight operating systems and virtual reality, to name a few. Oz garners respect and funding from Intel Corp., IBM, Panasonic Co. and Ericsson Inc. It has worked on the Helsinki 2000 Project, which will generate a virtual map of Helsinki, Finland, with IP addresses and Web links. Its Fluid 3D technology serves as Real Networks' virtual-reality player component and produces the tiny file sizes Cult 3D is known for, but it doesn't offer easy model creation.

■ Oz.com
San Francisco
www.oz.com/fluid3d



CYCORE founder Jerry Petterson (left) and CEO Bengt Starke are making it easier to add 3-D models to e-commerce sites

Cycore Computers

Location: Based in Uppsala, Sweden

U.S.: San Mateo, Calif.

U.S. Sales: (650) 570-7722

Europe: +46-18-656560

URL: www.cycore.com,
www.cult3d.com

Technology: 3-D Web modeling

Why it's worth watching:

Cycore's Cult 3D builds lightweight 3-D models for online catalogs and interactive prototyping. Cycore's unique pricing model may offer a new way to purchase Web development tools.

Company officers:

- Jerry Petterson, founder and chief technology officer
- Bengt Starke, CEO

Milestones: Founded in 1996

Employees: 60

Products: Cult 3D (rapid, lightweight 3-D modeling)

Cult Effects (video and animation special effects)

Customers:

CNN.com
(www.cnn.com/SPECIALS/multimedia)
Nokia Mobile Phones
(www.nokia.se/products/data/9110/communicator/virtual9110/cult3d.html)
Viking Husqvarna
(www.sew.husqvarna.se/3d.htm)

Red flags for IT:

- Cultural modesty. The product is great—but can Cycore's laid-back marketing style beat the brasher tactics of its U.S. competitors?
- Trade barriers. Make it in the U.S. and you can make it overseas. It doesn't always work in reverse, and that's what Cycore needs to achieve maximum staying power with U.S. corporations.
- Sticker shock. Although it's cheaper than hiring a 3-D artist, the \$3,600 fee for posting models on the Web is daunting.



Digital Wallets

BY CHRISTY WALKER

MENTION online shopping to Web-savvy consumers and you might expect to hear things like, "It's great. There's no hassle with malls or long lines, and I don't need to hunt for parking." But many consumers are frustrated by security concerns and redundant form-filing when shopping on the Web.

Enter digital wallets, software that eases the online shopping experience. Instead of reaching into their back pockets, consumers can use digital wallets to securely hold their credit-card number, shipping and mailing addresses and other personal information online.

"One of the biggest problems with online shopping is that someone gets halfway through the merchant form and stops," says Nancy Goldberg, executive vice president at CyberCash Inc. in Reston, Va., vendor of the InstaBuy digital wallet. "Imagine if consumers were at CVS, filled [up] their red basket with products, went to the check-out line and said forget it... and CVS had to deal with dozens of [incomplete] purchases."

According to New York-based research firm Jupiter Communications Inc., up to 27% of shoppers have abandoned an online order because of arduous order forms.

One Form for All

When using a digital wallet, consumers don't need to fill out order forms on each site when they purchase an item because the information has already been stored and is automatically updated and entered into the order fields across merchant sites. Consumers also benefit when using digital wallets because their information is encrypted—or protected by a private software code. And merchants benefit by receiving protection against fraud.

Digital wallets are available to consumers free of charge, and they're fairly easy to obtain. For example, when a con-

DEFINITION

A digital wallet is software that enables users to pay for goods on the Web. It holds credit-card numbers and other personal information such as a shipping address. Once entered, the data automatically populates order fields at merchant sites.

sumer makes a purchase at a merchant site that's set up to handle server-side digital wallets, he types his name and payment and shipping information into the merchant's own form. At the end of the purchase, the consumer is asked to sign up for a wallet of his choice by entering a user name and password for future purchases. Users can also acquire wallets at a wallet vendor's site.

Although a wallet is free for consumers, vendors charge merchants for wallets. Some wallet vendors make arrange-

ments for merchants to pay them a percentage of every successful purchase directed through their wallets. In other cases, digital wallet vendors process the transactions between cardholders and participating merchants and charge merchants a flat fee.

Digital wallets come in two main types: client-side and server-side. Within those divisions are wallets that work only on specific merchant sites and those that are merchant-agnostic.

Client-based digital wallets,

the older of the two types, are falling by the wayside, according to analysts, because they require users to download and install software. A user downloads the wallet application and inputs payment and mailing information. At that point, the information is secured and encrypted on the user's hard drive. The user retains control of his credit card and personal information locally.

With a server-based wallet, a user fills out his personal information, and a cookie is automatically downloaded. (A

cookie is a text file that contains information about the user.) In this scenario, the consumer information resides on the server of a financial institution or a digital wallet vendor rather than on the user's PC.

Server-side wallets provide assurance against merchant fraud because they use certificates to verify the identity of all parties. When a party makes a transaction, it presents its certificate to the other parties involved. A certificate is an attachment to an electronic message used to verify the identity of the party and to provide the receiver with the means to encode a reply.

Furthermore, the cardholder's sensitive data is typically housed at a financial institution, so there's an extra sense of security because financial environments generally provide the highest degree of security.

But even though wallets provide easy shopping online, adoption hasn't been widespread.

Standards are pivotal to the success of digital wallets.

Last month, major vendors, including Microsoft Corp., Sun Microsystems Inc. and America Online Inc., announced their endorsement of a new standard called EMCL, or E-Commerce Modeling Language, to give Web merchants a standardized way to collect electronic data for shipping, billing and payment.

Paul Hagen, an analyst at Forrester Research Inc. in Cambridge, Mass., says he believes that this standard will help with the adoption of wallets. "Some time next year, digital wallets will be integrated into browsers and other platforms, and then we'll see a gradual uptake in the wallets. Probably by 2001 we'll see a good percentage in use."

Walker is a freelance writer in Cambridge, Mass.

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MORE ONLINE

For more information on digital wallets, visit our Web site.
www.computerworld.com/more

How a Server-side Digital Wallet Works:

- 1 During the first purchase at a server-side digital wallet-enabled merchant site (such as Amazon.com or CDNow), the consumer types his payment and shipping information into the merchant's Web form.
- 2 At the end of the purchase, the consumer is prompted to sign up for a free digital wallet service by entering a user name and password so the user can have future access to the wallet.
- 3 The consumer's payment, shipping information and password are securely stored under a participating financial institution (such as First USA, Chase Manhattan or Citibank).
- 4 The next time the consumer shops at the same merchant or another server-side-enabled merchant, his digital wallet pops up on the merchant's payment page, already loaded with his information.
- 5 The consumer enters his own password and completes the purchase.
- 6 The payment information is transferred directly and securely to the merchant site for payment processing.



JOHN R. BULLION

Faxing On the Go

BY DAVID STROM

THERE'S nothing more frustrating for a business traveler than trying to send and receive faxes on the road. Having your most confidential business dealings exposed to the world of front-desk clerks — or just plain lost in transit — makes any trip irritating. And trying to stay put in one place long enough to receive a fax can be tough.

Fortunately, there are several Internet faxing services available that can make things easier, using either existing e-mail software or the Web to send and receive faxes securely and with less trouble. Although Internet faxing isn't new, in recent months these providers have added functions and made their products easier and cheaper to operate.

In most cases, the best solution for sending faxes is to use a fax modem on your PC, but that may not be practical when you travel and are expecting a fax or just want to fire one off quickly.

Enter the Internet fax providers. Some offer services for both sending and receiving faxes; others specialize in one direction only. The sending/outbound services work in one of four ways:

- Through an e-mail gateway maintained by the service provider. You compose your fax as an e-mail message and send to a special e-mail address that's maintained by the fax service provider, which transforms your message into a fax. This is the easiest method to use because there's nothing to learn and you can send messages to mixed fax and e-mail addresses.

- Through a Windows printer driver on your local PC. This is best if you compose your faxes with Microsoft Corp. Office applications such as Word.

- Through a series of Common Gateway Interface (CGI) scripts you install on your Web server. This is good if you want to quickly install a fax gateway on your local network.

- Through a Web form hosted on the fax service provider's Web site, which you fill out to

send the fax — great for occasional use.

One of the advantages of outbound services is the low rate for sending international faxes compared with the cost of using ordinary, dial-up phone lines. If you do a lot of international faxing, consider using those services exclusively.

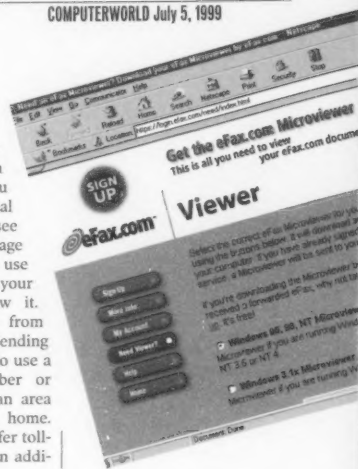
Other advantages over traditional, paper faxing are that some services send confirmations on successful transmissions to your e-mail and you don't waste time trying to send a fax to a busy fax machine — the services will make several attempts to send your fax.

But those services are just for sending faxes. There are other service providers that specialize in receiving faxes. They typically assign you a fax number in another area code and route the faxes to your own e-mail, as an attachment

or to a place on their Web site where you can view your faxes. You may require special viewing software to see the fax attachment image or you may be able to use Windows Imaging or your Web browser to view it. Those services range from free to fee-based, depending on whether you want to use a supplied phone number or choose one that has an area code closer to your home. Some providers also offer toll-free fax numbers for an additional monthly cost.

Speaking of fees, in some cases, you'll end up paying an initial account setup fee and either a per-page cost for your fax or a monthly charge that will cover a certain number of faxes. At around 10 cents per page or less, all compare favorably with the cost of sending ordinary faxes over regular phone lines.

The table below reviews nine providers and the technologies they support. Of the three described in detail, Jfax has the best range of both inbound and outbound technologies and NetMoves/FaxSav the most complete outbound offerings. Efax is a good first-time solution for outbound users as well. ▶



efax.com

(650) 324-0600

Efax was the first company to offer free inbound faxes to the public, but unlike Jfax, you'll need to download its viewing software to see your faxes, which arrive as e-mail attachments.

Efax also has an arrangement with eGroups that each eGroup will have access to its own fax number, allowing physical documents to be sent to the discussion groups.

It offers toll-free fax numbers, which cost \$30 per year, an initial fee of \$5 and 10 cents per page received. It doesn't currently offer any outbound services.

NetMoves Corp.

(732) 906-2000

NetMoves used to be called FaxSav, another longtime fax provider. It recently dropped its fees and offers a great many services for less than \$5 a month, including an inbound fax number in its area code, special Windows print driver faxing software (FaxLauncher) and 100 pages, both inbound and outbound, per month. If you use more than your 100 pages, the cost is 5 cents per page.

If you want to specify the area code for your inbound number, it will cost an additional \$3 per month. NetMoves has other outbound services including CGI scripts (FaxProxy) that turn your Web server into a fax machine and an e-mail gateway (FaxMailer).

Jfax.com Inc.

(888) 438-5329

Jfax was one of the original fax providers and has the most complete range of services.

The company was created by German rock star Jaye Muller, who was frustrated at missing his faxes when he traveled. Jfax offers two inbound services, both of which don't require any additional viewing software.

You can get a free fax number in a random area code, or, if you desire, a specific area code in one of 60 locations (or a toll-free number) that you can obtain for a monthly fee of \$12.50. In addition, the company offers an outbound e-mail gateway under its Jfaxsend.com domain, which also has a \$12.50 monthly fee.

Internet Fax Providers

| COMPANY | INBOUND TECHNOLOGY | OUTBOUND TECHNOLOGY | TYPICAL PRICING |
|----------------|---|---|--|
| Callwave.com | No viewer required | Web-based. Sends confirmation of fax via e-mail | Free with ads displayed in faxes. Need to re-qualify periodically |
| efax.com | Viewer required, toll-free option | No | Free (fee for toll-free option) |
| Envirofax.com | Yes, toll-free option | E-mail gateway | \$20 monthly fee. Part of fee donated to charity |
| Faxaway.com | No | E-mail gateway and Windows driver | Per-page costs, first fax free |
| Faxmission.com | Viewer required, toll-free option | Windows driver | \$15 setup. Also monthly and per-page fees |
| NetMoves.com | No viewer required | E-mail gateway, CGI scripts and Windows driver | Varies. Starts at \$5 monthly |
| Fax2net.com | No | Windows driver and Web form | Varies |
| Faxweb.com | Viewer required, notification via Web browser | No | \$25 setup, \$15 monthly, voice mailbox option |
| Jfax.com | No viewer required, toll-free option | E-mail gateway | One-time activation fee of \$15 and a monthly service fee of \$12.50 |

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JAVA

THE ACTION'S ON THE SERVER

Flexible, full-featured and scalable, Java application servers become the safe choice for mission-critical Web applications By Jon Udell

BROWSER-BASED Java is mostly a flop. As a server-side technology, however, it's rapidly becoming the favored method of implementing mission-critical and intranet applications. Information technology organizations need a way to supply Web clients with dynamically built Web pages that connect users to legacy (and new) applications and data.

Whether you blame it on the poor performance and compatibility problems of Java virtual machines (JVM), download hassles or the limitations of Java security, one thing is clear: Java's future as a client-side Web technology is cloudy. But Java the programming

New Tools for Server-Side Java

As a platform, Java has been evolving a set of mechanisms that can capitalize on the inherent strengths of server-side Java. Some of the most important include the following:

■ **The Java Database Connectivity** application programming interface (API), which connects Java software to SQL databases.

■ **The servlet API**, which connects browsers to Web-based services more adroitly than the Web's conventional Common Gateway Interface mechanism.

■ **Java Server Pages** technology. Similar to Microsoft's Active Server Pages, it injects Java logic into HTML page templates.

■ **Enterprise JavaBeans**, which define a standard component archi-

ture for deployment of Java-based business logic.

■ **The Java application server**, which is a new breed of product that complements and extends the platform mechanisms that have emerged in the past two years. Java application servers solve some or all of the problems that plagued Java's adoption as a server technology, such as:

■ **Session maintenance.** The Web is a so-called "stateless" environment, but a network service needs to know which logged-in user it's talking to. Application servers create and maintain user sessions.

■ **Security.** Network services also need to know which logged-in user can see which Web page. Application servers can define and enforce access-control scenarios.

■ **High-performance database connectivity.** An application server can create a pool of database connections, then reuse them to ensure speedy access to data.

■ **Fault tolerance.** A network service can't fail. Application servers can distribute services across multiple Java virtual machines, CPUs and/or computers. When a service runs as multiple instances, there's no single point of failure.

■ **Scalability.** A replicated service isn't just highly available, it's also scalable.

When the user population grows by leaps and bounds, as often happens with Web-based services, you can just add more CPUs or computers to your server farm.

- Jon Udell



ANDY SINGLETON of Cambridge Interactive calls IBM's VisualAge for Java "absolutely the best integrated development environment for Java"

language (as opposed to Java the environment) has several strengths that make it an ideal choice for delivering those kinds of network services. Java programmers don't manage memory directly, so network services written in Java are immune to a whole class of buffer-overrun errors that can plague services written in C or C++. Java's simple and clean mechanisms for exception handling and multithreading make it easier for developers to write reliable and responsive network services. Finally, Java is hot. Developers want to learn it and use it, so plenty of talent is becoming available for Java projects.

The server environment tends to minimize Java's weaknesses. A browser needn't wait for a Java-based service to start

because that service is always running. If the service expresses applications in HTML, the browser doesn't care which JVM hosts the service and isn't constrained by Java's client-side security sandbox.

In the snapshots that follow, we profile five companies that have deployed a different Java application server to support an important application. The diversity illustrates how these products have begun to specialize and differentiate. Collectively, they add up to a resounding affirmation that Java is rapidly becoming the de facto standard language for the network services that drive thin-client, Web-based applications. And Java application servers are becoming the standard way to build and deploy those network services.

WebSphere Fills Gaps

Organization: Cambridge Interactive
Cambridge, Mass.
www.cinteractive.com

Assignment: Find a Java-based application server that can take over where ColdFusion and Active Server Pages leave off

Solution: IBM's WebSphere
Lead: Andy Singleton
(asinglet@cinteractive.com)

Cambridge Interactive's Power Steering is a Web-based application that's used to help fast-moving organizations set strategic goals, recruit teams, collaborate and measure progress. Early adopters of Power Steering include KPMG LLP and Cambridge Energy Research Associates.

When Power Steering was on the drawing board, Cam-

bridge Interactive did an exhaustive evaluation of 25 Web application servers to run it. The primary concern was developer productivity, and on that basis the winning choice was IBM's Java-based WebSphere (www.software.ibm.com/webserver/appserv), says CEO and Chief Technology Officer Andy Singleton.

Not all the options were Java-based. Allaire Corp.'s ColdFusion software was a contender, as was the suite of technologies associated with Microsoft's Active Server Pages (ASP) environment. In the end, Singleton says, Cambridge Interactive decided to "use ColdFusion for the easy things and WebSphere for the hard things."

Why not ASP? There isn't, Singleton says, a smooth integration between Microsoft's Component Object Model (COM)-based business-logic components written in C++ and the VBScript (a subset of Visual Basic) code that manipulates those components from within ASP page templates.

Java is more powerful than ASP-based scripting languages and easier to learn and use than C++. In an all-Java environment, developers can master one set of skills that govern both the construction and use of middleware components.

Why WebSphere? For starters, it works closely with IBM's VisualAge for Java, which Singleton calls "absolutely the best integrated development environment for Java." When a method is rewritten, for example, VisualAge can track down and adjust all the affected references to that method.

WebSphere was also an early implementer of Java Server Pages (JSP). Sun's Java Software Division just released Version 1.0 of the JSP spec, but even the 0.9 level of the standard in WebSphere 3.0 is very effective, Singleton says. Like ASP, JSP supports an appropriate division of labor. The company's Web designers can use WYSIWYG HTML editors such as Allaire's HomeSite or MacroMedia Inc.'s Dreamweaver to build the presentation layer of an application, producing templates that Web developers can wire to server-based business logic.

Singleton says he especially prizes WebSphere's test environment, which, in conjunc-

tion with VisualAge, enables single-step debugging of JSP-based services. He also likes the fact that WebSphere bundles IBM's highly regarded XML parser and comes with a Java-based connector to Notes databases.

The services that run under WebSphere conform to the standard servlet application programming interface. As such, they're portable to other Java-based application servers, many of which can also host servlets. And like other Java application servers, WebSphere offers next-generation portability in the form of support for Enterprise JavaBeans (EJB). Although no one interviewed for this story has deployed EJB components, they all say they think the technology is maturing and will be a hedge against application server lock-in.

Round-the-Clock Benefits

Organization: Workscope Inc.
Vienna, Va.

www.workscope.net

Assignment: Find an application server that keeps clients' benefits programs running 100% of the time

Solution: Sun Microsystems Inc.'s NetDynamics, Windows NT clustering, Microsoft Internet Information Server (IIS) and an Oracle 8 database

Lead: Scott Bennett
(scott.bennett@employee.com)

Workscope builds benefits administration systems for corporate clients, including Cigna Corp., Fidelity Investments and Lockheed Martin Corp. Hosted at Workscope's site, these systems combine interactive voice response and Web technologies to enable employees at the client companies to enroll in benefits programs, monitor status and change their electives. The systems are also used by human resources personnel to administer benefits programs.

The Web faces that these systems present to employees and administrators are HTML pages dynamically built by Sun's NetDynamics application server. Running on a two-node Windows NT cluster, the server sits between a farm of IIS Web servers that handle incoming connections and a back-end Oracle 8 database. It links the systems, building the SQL statements that query the

database and generating the HTML to display the results.

Scott Bennett, manager of software development at Workspace's Employee Communications Services subsidiary in Natick, Mass., says NetDynamics' smart, powerful yet extensible data-aware objects are among its strongest features. The objects know how to exploit native PL/SQL (Oracle Corp.'s extension of SQL), stored procedures and cursors. "But when you call a method that generates SQL, you can jump in and modify that SQL statement," Bennett says. Likewise, Bennett's team can easily intercept and modify the HTML fragments emitted by the Java middle-tier logic. Bennett says he likes the power and flexibility of this approach.

An early adopter of NetDynamics, Workspace currently runs Version 3.1 of the product and is evaluating the forthcoming Version 5.0. Version 5.0 is slated to improve NetDynamics' fault tolerance and offer more robust support for EJB. Workspace is also looking forward to EJB support in Oracle, Bennett says, explaining that Workspace hopes to synchronize its developers on a common set of Java-oriented skills and to flexibly deploy Java-based logic in the most appropriate ways.

"I want multiple vendors competing to make my Java services run effectively in their environments," Bennett says.

Streamline Records

Organization: Elizabeth General Medical Center
Elizabeth, N.J.
www.egmc.org
Assignment: Consolidate a rainbow of legacy systems to make patients' records accessible

Solution: SilverStream Application Server
Lead: Vijay Sonty
(vsonty@travelin.com)

At Elizabeth General Medical Center (EGMC), CIO Vijay Sonty rides herd over dozens of legacy systems of every stripe and hue: financial, accounting and clinical applications that run on Unix, IBM AS/400, Digital Equipment Corp. VAX and Silicon Graphics Inc. servers. To consolidate them, Sonty turned to SilverStream Software Inc.'s Application Server (www.

silverstream.com). The initial project, a six-month blitz done in collaboration with consulting partner Siemens Information and Communications Networks, produced a Java-based information hub that provides 100 users with streamlined access to many of the legacy systems.

Historically, retrieving a complete patient record meant navigating through up to 15 screens presented by as many as a dozen back-end systems, Sonty says. Now, each department gets its own customized portal into the information hub and "the contents of those 15 screens collapse down to one screen," he says. These efficiencies, to be extended this year to 500 users in 50 departments, have yielded time savings and productivity gains worth over a million dollars.

Among application servers, SilverStream is distinguished by three particular strengths, Sonty says.

One strength is excellent data connectivity, which includes the standard Java Database Connectivity (JDBC) support for SQL data as well as more specialized support for Lotus Notes and for data created by SAP AG and PeopleSoft Inc. enterprise resource planning applications.

Another strength is its support for content management. The server includes tools — a full text indexer, a version-control mechanism — that help EGMC manage the free-form documents that augment the legacy relational data.

And finally, SilverStream offers a very rich graphical user interface-based development environment that can express complex screens either as HTML or as client-side Java. Sonty says HTML is the preferred way to deliver zero-install, thin-client applications today. But Java's unrealized potential for code mobility will eventually pan out, he says. "We need to deliver applications at the point of service," Sonty says. EGMC has experimented with using smart cards to store patient records, and

Sonty says he hopes to equip doctors and nurses with Windows CE or other handhelds that they can use to tap into the information hub from anywhere on their daily rounds.

Old Data Gets XML'd

Organization: The Dun & Bradstreet Corp.
Murray Hill, N.J.
http://globalaccess.dnb.com

Assignment: Find an application server that can slice and dice old D&B data sources into new XML services on the Web
Solution: webMethods' B2B Integration Server
Lead: Tom Gwydir (gwydir@dnb.com)

Dun & Bradstreet collects and distributes financial data on more than 50 million companies worldwide. Through new initiative called the Global Access platform, the company hopes to transform its business in two ways: First, create a virtual repository by hiding a mishmash of legacy data sources behind a middle-tier service that presents a common XML-based interface. Second, let D&B customers connect to that service and assemble their own highly customized D&B data feeds using COM- or Java-based D&B-supplied tool kit.

At the heart of the Global Access platform is webMethods Inc.'s B2B Integration Server (www.webmethods.com), an NT-based Java application server that's adept at defining XML interfaces to Web-based services and connecting those interfaces to Java implementations.

Why Java? D&B had originally planned an all-Microsoft system involving IIS, ASP, COM, Microsoft Transaction Server and Microsoft Message Queue. "We had [Visual Basic] skills, not Java skills," project director Tom Gwydir says.

But getting all the Microsoft parts to work together properly "requires five CDs and 10 reboots," project architect John Peterson says. "We can inflict that on ourselves, but not on our customers."

Today, Global Access runs as a centralized D&B-managed service, but the company hopes to deploy server-based components to client sites in addition to the existing client-side tool kit. "Java is far more flexible, from a deployment perspective, than a Microsoft-

style solution," Peterson says.

Global Access does use JDBC to connect to the SQL Server database to authenticate and track users of the system. But it doesn't require — nor does webMethods provide — the sophisticated session management and load-balancing that other Java application servers offer. But Gwydir and Peterson

aren't too worried about that. The Global Access transaction protocol is, like HTTP itself, stateless. And their real bottleneck isn't in the middle tier, but between it and the back-end data sources. What D&B needed most, and what webMethods delivered, was an easy and effective way to turn legacy data streams into new products.

Do-It-Yourself Project Management

Organization: Conexant Systems Inc.
Newport Beach, Calif.
www.conexant.com/

Assignment: Choose an application server to host Talon, a thin-client application that herds projects through their life cycles

Solution: Bluestone Software Inc.'s Sapphire/Web

Conexant Systems Inc. was born in January when Rockwell International Corp. spun off its Rockwell Semiconductor Systems business to shareholders. A provider of semiconductor products for the fax, modem and wireless communications market, Conexant uses a "phase-gate" methodology called Phoenix to manage products through their development life cycles.

The Phoenix process defines a product life cycle as a series of phases, each accompanied by specified deliverables and a go/no-go gate that governs whether a project has earned the right to continue to the next phase. The problem was that the gates were always open. Uneconomical projects weren't being killed, because progress — or lack thereof — wasn't measurable.

After evaluating several document-management, groupware and project-management



GWYDIR: Not worried about lack of session management

tools, Conexant decided to build its own custom groupware application to support and monitor the Phoenix process on the company's intranet. Why Java? Conexant knew it wanted a thin-client system and flexible middleware to connect the client to an Oracle database. The project, dubbed Talon, was "a great first trial use of this technology," says CIO Ashwin Rongan.

Roger Bly, Conexant's manager of emerging new technology, says he evaluated several Java application servers and concluded all meet the basic requirements — session maintenance, database connectivity, fault tolerance and scalability. For the first incarnation of Talon, he settled on Bluestone's Sapphire/Web (www.bluestone.com). After nine months of prototyping, three developers spent four months building the application, which now supports more than 60 product development teams and 700 registered users.

Like the other projects featured here, Conexant's client is an HTML browser unassisted by Java. "I subscribe to the Yahoo school of design," Rongan says. "Simple, easy-to-use, nononsense, not always pretty, but it works and it's fast."

The biggest surprise was Java's excellent performance. That's because middle-tier applications spend most of their time talking to the database, Bly says. "When you monitor the Java logic in the app server, it hardly flickers," he says. The biggest obstacle was the inability to connect Java software to documents stored as Oracle8 Blobs, a problem Rongan says is fixed in Oracle8i.

What's the bottom line? "A technical project will always achieve its objectives, given enough time, energy and resources," Rongan says. The trick is to identify — and cancel — projects that aren't meeting their milestones. Conexant's Talon system is now enabling the company to do just that. ■

Udell, an independent author and Web/Internet consultant, was Byte Magazine's Web architect and columnist. He's also the author of Practical Internet Groupware, forthcoming from O'Reilly and Associates. His home page is <http://udell.roninhouse.com>.

Microsoft is Born

BY MARY BRANDEL

WHAT AN American tale. Microsoft Corp. — now the world's largest independent software company — was started by two brainy college dropouts, Bill Gates and Paul Allen, who jumped at the business opportunity they recognized when the PC kit, the Altair, became available. They created a version of the Basic programming language to turn the Altair into a more functional machine.

Over the next 24 years, after some big breaks, inspired engineering, brilliant marketing and sharp-toothed competition, Microsoft became the dominant force in the industry. And Gates became the richest man in the world at \$90 billion.

Microsoft's biggest break came in 1980, when IBM asked



THE MICROSOFT STAFF a few years later. By that time, the company name was registered and an official partnership was established between Bill Gates (first row, far left) and Paul Allen (first row, far right)

for help building MS-DOS, an operating system for its first PC.

From then on, Microsoft was golden. The guaranteed revenue stream funded the development of PC applications as

well as a graphical extension to MS-DOS called Windows, which shipped in 1985. That graphical user interface (GUI) led Apple Computer to file a lawsuit (which eventually

failed), alleging that Microsoft copied Apple's Macintosh GUI.

Microsoft's competitive style became evident in 1987, when it continued enhancing Windows while working with IBM on OS/2, the "next-generation, GUI-based operating system."

When Windows 3.0 was released in 1990, it was clear Microsoft held all the cards, owning both the operating system and the ability to develop applications for it. The company easily entered the server and Internet markets, although the outcome of an antitrust case may muddy Internet waters.

Whether you love 'em or hate 'em, Microsoft will be heralded as the one that lit the fire under the PC industry and made computer a household word. ▀

Brandel is a frequent contributor to Computerworld. Contact her at brandel@cwix.com.

Telenet Becomes Available

Developed by the Advanced Research Projects Agency (ARPA) in 1969, the Internet may have been the first packet-switched network. But the first commercial packet-switched network was from Telenet Communications Corp., which emerged six years later. With its introduction, companies for the first time had an economically feasible way to offer employees and business partners remote access to corporate computers for everything from order entry to e-mail.

The Internet and Telenet share much of the same technology — both were invented by Larry Roberts, heralded as "the founder of the Internet."

Roberts began Telenet — the first successful data communications carrier — after leaving ARPA in 1973.

"People were telling me [packet switching] wouldn't be commercially successful, and I wanted to prove them wrong," he says. He borrowed a lot of code from the Internet, then called Arpanet, but had to develop a standard interface: the widely used X.25.

Most of Telenet's customers were nationwide time-sharing services. Next came corporations like General Motors Corp.

The company grew rapidly and hit the \$60 million mark in 1979, when Roberts sold it to GTE Corp. Sprint Corp. later acquired the business and continues to offer packet switching-based services; however, it uses the Internet for the main transport. As the Internet becomes faster and more reliable, Roberts predicts that commercial private networks will fade. "Commercial private services are bigger than the Internet in terms of equipment sales, but [Internet] traffic is much bigger," he says. "It won't pay to run any other network." ▀

Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.



LARRY ROBERTS

Homebrew Computer Club

In the mid-70s, the only people with home computers were those who could build them. These computer lovers had a way of finding one another, and by 1975 they were banding together in clubs like the Homebrew Computer Club in Menlo Park, Calif., whose members included Lee Felsenstein, designer of the Osborne computer, and Steve Wozniak, co-founder of Apple Computer.

"There were a lot of very innovative people in the group who were not routine thinkers," says Robert Lash, who attended the first meeting as a high school student.

That meeting was held in the garage of co-founder Gordon French, a computer consultant who had built a computer based on Intel Corp.'s 8080 chip. The meetings were like an oasis to the computer hobbyist. "You could dig up scraps of information of what was happening in certain chip companies and what parts would be available," Lash says.

One day in 1975, Wozniak brought in a circuit board he'd constructed — it would be the foundation

for Apple I. "What impressed me was that he had integrated so much on a single board rather than multiple boards wired together," Lash says.

Wozniak has been known to say that without computer clubs there would probably be no Apple computers. But mostly, Lash says, Homebrew gave ordinary people access to computers. And that, he says, changed the world. ▀



Steve Wozniak constructed the circuit board that would launch Apple

1975

■ The Altair kit computer is featured on the January cover of *Popular Electronics* magazine (Flashback, June 28). It's based on Intel's 8080 microprocessor.

■ The first laser printer that prints press files — meaning what you see is what you get — comes out of Xerox Parc. Pictured here is the 9700, a later version developed in 1976.



■ Sony introduces the Betamax home video system.

■ A computer helps prove that the distance from home plate to the left-field corner at Boston's Fenway Park is actually 9 feet shorter than the "315" posted on the outfield wall.

■ Teamsters boss Jimmy Hoffa disappears from suburban Detroit. He's presumed dead, but his body is never found.

■ The first issue of *Byte* magazine is published.



■ IBM releases the IBM 5100 Portable Computer, one of the first of its kind. The briefcase-size minicomputer stores up to 48,000 bits and comes with a small display screen. It weighs 50 pounds and costs \$9,000 to \$20,000.

■ The Computer Store is opened by Dick Heiser in Los Angeles. It sells assembled Altairs, boards, peripherals and magazines. It's one of the first retail computer stores in the U.S.

■ *The Mythical Man-Month: Essays on Software Engineering*, by Frederick Brooks, is published by Addison-Wesley.



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A Tale of Two Cities

Minneapolis/St. Paul would have been short work for Dickens: Skip "the worst of times" and you have a comfortable place to live, lots of job opportunities, flexible workplaces and competitive compensation
By Emily Leinfuss



IT'S THE BEST OF TIMES for IT professionals in Minnesota's Twin Cities. The area boasts a sophisticated information technology market, a good quality of life and high-end compensation. If that weren't enough, area companies are pushing to improve the corporate culture through retention and recruitment efforts that boost the quality and substance of IT jobs.

Unemployment in the Twin Cities area is so low, especially in IT, that companies are rapidly changing and expanding their hiring and workplace policies. They're developing recruitment and retention policies to reduce turnover and grappling with changes in hiring practices and cycles. Marc Gordon, CIO and senior vice president at Best Buy Co. in Minneapolis, knew that when he took the firm's top technology job more than a year ago. He arrived ready to face the recruitment and retention challenge head-on. In the past year, he says, the company has increased its staff 40% to 60% and cut its turnover rate in half.

"We are making Best Buy an attractive place to work, where top people want to stay long-term," he says. Retention policies focus on flexibility and rewarding performance. "Flexibility is a two-way street. If we want teams to be flexible about

completing projects and responding to problems at strange hours, then we have to be flexible, too," he says. So, the firm has given laptops to supervisors and introduced telecommuting, with employees making their own schedules.

Besides compensation, Best Buy also has a fun-oriented, multitiered performance rewards program that offers prizes rising in value from T-shirts to a dinner, a laptop and a mystery prize. The firm even hires puppets and clowns for Family Fun nights.

Best Buy isn't the only area company developing retention policies to support the IT professional. At Carlson Companies Inc. in Minneapolis, a major travel, hospitality and marketing firm, work/life initiatives are based on education and training. The firm focuses on career development: how IT employees want to grow their skills. It concentrates on providing educational tools, including technical- and soft-skills training like communications and presentations. It also offers brown-bag lunches and tuition reimbursement, says Renee Bianchi, Carlson's IT human resources manager.

All area companies, large or small, hot or not, are wrestling with recruitment issues and bending over backward to accommodate employees. Training has become crucial to Don Blanding, senior director of Fairview Health System in St. Paul, because he's willing to educate non-IT workers in technology skills. "If I have a registered nurse or a pharmacist who is interested in an IT career, I will get them trained in [Microsoft Corp.'s] Visual Basic and HTML — whatever it takes," he says.

The tight job market has also affected the IT hiring cycle, according to Gordon and Bianchi. It's faster and more aggressive than ever. "The [average] time it takes to look for a job, to [get an] offer in hand, is seven days," Gordon says.

Bianchi agrees. "We have to

be quick to bring people in through the interview cycle and very competitive on salaries and opportunities," she says.

Bob Anderson, who covers the St. Paul and Minneapolis job market for search firm Romac International Inc. in Minneapolis, says that dynamic has changed the way companies hire employees and recruiters. They know that potential employees can be picky.

"Counteroffers happen 95% of the time now," he says. Plus, people know the market is tight and can look more thoroughly for something that's perfect for them, he says.

In demand are Internet, e-commerce development and project management skills. "The so-called emerging technologies, critical skills like C++ and Java developers, are in demand. But so are networking and infrastructure talent," says Charles Dahl, president of search firm Charles Dahl & Associates in Minneapolis. Dahl says people with those skills can earn 10% to 15% above the usual IT salary. Perks, sign-on bonuses and employee-referral bonuses are also commonplace, he adds.

Great Place to Live

With all these changes, the Twin Cities offer the best of situations for IT professionals. Part of the reason it's such a tight market is that the area is also a great place to live. Little distinction is made culturally between the two cities, although Bianchi says Minneapolis is a bit more cosmopolitan, while St. Paul is more historical, with older buildings and a quaint, downtown feel.

Sure, the winters are brutal, but "There is a very low crime rate, relatively affordable housing [and] good education," says Gordon, who moved to Minneapolis from southern California 14 months ago. "[It's a] great place to raise a family, [there's] a cultural aspect to both cities and the commute is good." Blanding says the clean living lures people from all over. "I had a fellow in my office last week from Reston, Va., where they had a smog alert and couldn't buy gas in the daytime," he says. ■

Leinfuss is a freelance writer in Sarasota, Fla.

Twin Cities' Salaries

Average annual salaries by years of experience in Spring 1999 as reported by hiring managers in Minneapolis/St. Paul:

| TITLE | 1 TO 2 YEARS | 3 TO 4 YEARS | 4+ YEARS |
|---|--------------|--------------|----------|
| PC technician | \$31K | \$36K | \$39K |
| Computer operator | \$26K | \$31K | \$33K |
| Programmer/analyst | \$37K | \$45K | \$51K |
| Senior programmer/analyst | \$49K | \$63K | \$64K |
| Senior systems programmer | \$46K | \$56K | \$66K |
| Senior systems analyst | \$49K | \$63K | \$64K |
| Project manager/systems and programming | \$47K | \$62K | \$70K |
| LAN manager | \$51K | \$58K | \$68K |
| Network administrator | \$47K | \$55K | \$58K |

SOURCE: COMPUTERWORLD'S 1999 MOST ATTRACTIVE SALARY SURVEY

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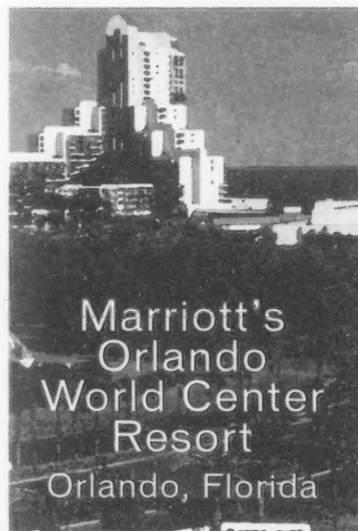
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TECHNICAL RESOURCE ACCOUNT MANAGER - Meet with client EDP management to assess human resource requirements. Assist in defining actual needs, providing alternatives, develop and implement strategies to locate and recruit necessary EDP professionals. Ensure profitable management of accounts. Experience must include Account Management, Technical EDP Resourcing Domestic/International. Requirements Process Planning, Service Level Agreements and 4 years exp. in job or related occupation EDP Recruitment Resource Management. EDP Management 40hr/wk. \$50,000/yr. Jobtitle/Interview: FL. Send ad & resume to Dept. of Labor/Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302 Job #FL-1970862

TECHNICAL RESOURCE ACCOUNT MANAGER - Meet with client EDP management to assess human resource requirements. Assist in defining actual needs, providing alternatives, develop and implement strategies to locate and recruit necessary EDP professionals. Ensure profitable management of accounts. Experience must include: Account Management, Technical EDP Resourcing Domestic/International, Requirements Process Planning, Service Level Agreements and 4 years exp. in job or related occupation EDP Recruitment Resource Management EDP Management 40hr/wk. \$50,000/yr. Jobtitle/Interview: FL. Send ad & resume to Dept. of Labor/Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302 Job #FL-1970867

SOFTWARE ENGINEER - Needed to research, design, and develop software for scientific/hybrid apps used in LAN and WAN environ. Req. MSCS, MSEE, or its equiv. exp with assembly lang., C/C++ programming, other development on LAN/WAN sys running UNIX, Novell Windows NT, TCP/IP. \$60k/yr. Mail or fax resume to:
Technware USA
1691-C Sands Place
Marietta, GA 30067
Fax: (770) 690-9133
Attn: Charlie Qian

Financial Systems Analyst needed by Financial Computer Systems Co. in Skillman, NJ. For finl systems & s/ware analysis, system mgmt for finl mfgs, s/ware conversion & modifications & analysis of s/ware running in UNIX/VMS/NT envts. Must have Bachelors in Finance, Economics, Comp Sci or related major. Respond by resume to: HR Dept., OMR Systems Corporation, 101 Business Park Drive, Skillman, NJ 08558

Systems Developer/Analyst wanted by Int'l Container Shipping Line in New York City. Must have Bach in Engg or Comp Sci and 1 yr computer experience. Must prepare programs and apps in English/Italian for operations in U.S. & home office in Italy. Respond by resume to: HR Dept., Mediterranean Shipping Co. (USA) Inc., 420 Fifth Ave., New York, NY 10018

Project Leader needed by Commercial Bank in New York City. Must have Masters in Comp Sci/Engg or Bus. Mgmt and 1 yr exp sup'g & coordinating activities of S/ware Enggs, establishing work procedures to meet production schedules using knowl of multi-national & multi-currency banking s/ware and researching, design & develop comp database s/ware systems using COBOL, UNIX, IDEAL, Case Tools, Access and Ideal Datacom DB for banking industry. Respond to: HR Dept., Republic National Bank of New York, 452 Fifth Ave., New York, NY 10018

Software Engineer needed by IS/IT Consulting Co. in Metuchen, NJ for client locs throughout US. Must have Masters in Comp Sci or Comp Engg & 2 yrs software experience. Respond to: HR Dept., Avenir, Inc., 16 Pearl St., Ste 205, Metuchen, NJ 08840

Programmer Analyst/Web Developer needed by Internet Commerce, Health Care & Electronic Co. in New York City. Must have Bachelors degree and 2 yrs exp analyzing, design, develop & implement web applications using HTML, CGI (Perl), JavaScript, Java Script, Borland Delphi 2.0 (SQL) & paradox/Access Tables. Respond to: HR Dept., Medisite Publishing, LLC, 80 East 13th St., 5th Fl., New York, NY 10003

Computer Systems Tech. Support needed by Computer Hardware Co. in Old Bridge, NJ. Must have BS in Electronic Engg & 2 yrs exp installing & troubleshooting PCs and configuring & setting up systems at customer sites. Respond by resume to: HR Dept., Bits & Bytes, 109 White Oak Lane, Old Bridge, NJ 08857

Systems/Database Administrator Responsible for overall maintenance and implementation of a Scalable SQL server, including a Solomon IV accounting system in a Windows NT environment. Required skills include SQL, EDI, Visual Basic, Windows NT and MS Access. Candidates must possess at least one year of work experience as an administrator, as well as a Masters degree in Computer Science or Information Management. Qualified candidates should send resumes to LPI Cosmetics, Inc., 300 Kennedy Drive, Sayreville, New Jersey 08872, or fax resume to 732-525-2719. Attention: Nicole Norton.

Zurich Capital Markets, Inc., an Insurance & Reinsurance Co. in Manhattan seeks to fill the following positions:
1. Senior Systems Administrator - to maintain & coordinate all systems infrastructure using Win NT, UNIX, WAN, LAN, Sybase & TCP/IP.
2. Programmer Analyst - to develop & test finl into systems using C++, Perl, Sybase & Solaris.
Both positions require BS in Comp Sci, Math or Engg & 2 yrs software experience. Respond by faxing resume to: (212) 208-3601 Attn: Systems

Framingham MA software consulting firm seeks system architects to develop systems using OOA & D techniques and RDBMS technologies under Windows and Unix, conduct JAD sessions to define specs, develop multi-tier architectures, direct and mentor team members. Requires MS or equivalent in CS with 3 years, or BS or equivalent in CS with 5 years, directing, analyzing, designing and developing applications under Windows/Unix. Must have experience in a broad spectrum of upcoming client server technologies. Apply to: HR Unique Computing, 1661 Worcester Rd., Framingham, MA 01701.

Database Research Scientist needed by Research Institute in Providence, RI. Must have MS or equiv in Comp Sci or Math and 2 yrs exp performing research & develop in multimedia databases, data analysis, data mining, pattern recognition & knowl discovery using C++, Visual C++, HTML, XML langs and Sybase, SQL Server, Oracle Express, DBM, Cognos PowerPlay and Scenario s/ware tools and MicroStrategy's DSS Agent and Server systems. Respond to: HR Dept., Fraunhofer Center for Research in Computer Graphics, Inc., 321 S. Main St., Ste 2, Providence, RI 02903.

Programmer Analyst (MS) needed by NY based IT Services Co. for job loc. in Bala Cynwyd, PA. Must have Masters in MIS, or Business & Computers and 6 mos exp design, develop & implement MIS & CS technology in C, C++, HTML, and maintaining GIS envts in Windows, MS-DOS, Win 95, Developer/2000, VB 4.0, Power Builder 5.0, Informatica 5.0, Data Modeling & databases in Oracle 7.0, Sybase 11.0. Respond to: HR Dept., FutureSoft Inc., 222 West 57th St., Ste 26-S, New York, NY 10019.

Systems Analyst needed F/T by Automotive Service Chain in Woodside, NY. To analyze user reqmts, procedures and problems to automate processing. Must have Bach in Comp Sci or related major. Respond to: HR Dept., Saeilo Motors NY Inc., 65-15 50th Ave., Woodside, NY 11377.

Software Engineer needed by S/ware Consulting Co. in Iselin, NJ. Must have 1 yr exp design telecom computer s/ware, Bachelors in Comp Sci, Comp Engg, or Electrical/Electronic Engg req'd. Respond by resume to: HR Dept., MJ Technologies of NJ, 762 Green St., Ste 2C, Iselin, NJ 08830.

Programmer-Analyst: B.S. in Engineering/Computer Science plus two years experience, or M.S. in Engineering/Computer Science. Send resumes to Margaret Mason, Tom McLeod Software Corp., 200 Century Park S. Ste 212, Birmingham, AL 35226.

Senior Software Developer. Design and develop distributed client server systems utilizing object-oriented methods on UNIX platform; utilize web based database technology for data warehousing and distribution using C, C++ and Java for web enablement of client/server applications. Req. MS in comp. sci. or engineering & 3 yrs exp as a developer or a BS in comp. sci. or engineering & 5 yrs exp as a developer. From \$65K. Resumes to: V. Ganapuru, Instcomp, Inc., 4501 Circle 75 Pkwy, E-5330, Atlanta, GA 30339

Project Manager. Lead team in creation of RPG-ILE based customer service/order entry/auto replenishment system on AS/400 platform supporting EDI over WAN. Requires MS in comp. sci., engineering, or business admin. & 2 yrs exp. as a comp. project mgr or Programmer/Analyst on AS/400 platform. \$70K. Resumes to: K. Tice, Books-A-Million, 402 Industrial Ln, Birmingham, AL 35211

Programmer/Analyst needed for software development & consulting svcs using C++, Java, VB, Oracle, SQL Server, DB2 in a client server environment preferably with Healthcare/Insurance industry exp. Must have BS/MS or equivalent in CS, MIS, Engg or Math with minimum 3yrs exp. Respond to: HR Dept., Primesoft, Inc., 1259 Rt 46E, Bldg #1, Parsippany, NJ 07054.

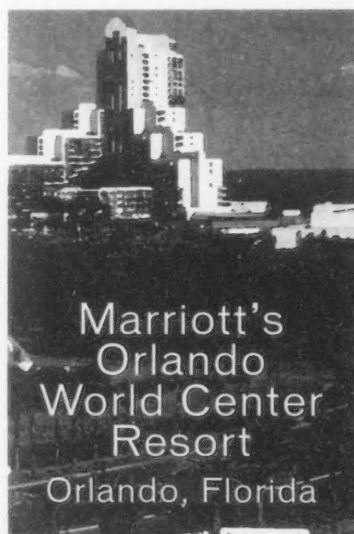
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Systems Analyst Programmer (Houston, Texas and various unanticipated client sites in the U.S.) Meet w/ national/multinational clients, EDP & business users to ascertain updated system requirements & to identify problem areas, revise and/or rewrite system and functional specifications as required. Design & dwp various client/server applications using Pro*C, Oracle Forms 3.0 on a VAX/VMS platform. Requires Bachelor's degree in Comp Sci. or Computing in Business and 2 yrs. exp. in job offered or 2 yrs. exp. in the related occupation of Analyst/Programmer. 8-5, 56K/yr. Apply at the Texas Workforce Commission, Houston, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity Room 42AT, Austin, Texas 78701. J.O. #TX0519450. Ad Paid by an Equal Opportunity Employer.

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Program Analyst Perform object Oriented programming, network programming, network programming and client/server applications using C/C++, Visual C++ and Java, perform programming on platforms such as DOS, Windows and UNIX, conduct parallel and multiprocessor programming. Req. BS in computer or electrical eng. 3 mon exp in job offered or related as programmer or consultant, related exp include using Java for network programming. 40 hrs/wk, 8-5pm \$45K/yr. Send resume to MJC/ESA, PO Box 11170, Detroit, MI 48211-1170. Ref No. 58299. Employer paid ad.

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RESEARCH AND DEVELOPMENT MANAGER Will perform detailed design, analysis, coding testing and documentation of various phases of business database applications. Will modify applications and create add-on modules for open architecture accounting applications, using Database/Forms based programs. Will evaluate the feasibility and requirements for modification requests, will estimate time required to accomplish same. Will trace and correct application module problems. Will provide support as well as practical solutions, for end users with computer application usage, hardware and network issues. Will assist in troubleshooting PC and network issues. Requires B.A. in Computer Systems. In completing bachelor's program, must have acquired a working knowledge of Database/Forms programming and general modular programming. Must have current authorization to be permanently employed in the United States. Annual salary of \$30,401. 40 hours/week (hours vary). Send resume with Social Security Number to Indiana Department of Workforce Development 10 N. Senate Avenue, Indianapolis, Indiana 46204-2277. Attention: Gene R. Replige. Reference: I.D. #049384.

Database Design Analyst - 40 hrs/wk, 8:00 a.m. to 5:00 p.m. \$74,000/yr. Responsible for overall database design, analysis, development and implementation of client-server systems in conjunction with the client's unique hardware environments. Identifies database requirements through functional analysis, user interviews and the development of database specifications. Supervise 2 employees. Required: Bachelor's Degree in Computer Science, Physics or math, and 5 years experience in job offered or as systems analyst or computer programmer. East Moline, IL. Must have proof of legal authority to work permanently in the U.S. NO CALLS - SEND 2 COPIES OF BOTH RESUME AND COVER LETTER TO: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North Chicago, Illinois 60605. Attn: Lydia Clark. Reference: 20764-E. AN EMPLOYER PAID AD.

Programmer Analyst To work in various unanticipated locations throughout the U.S. Under direct supervision, plan, develop, test and document computer programs using IBM Mainframes. DATABASE 2, CICS, COBOL, DB2, JCL, TSO/SPF, VSAM, UNIX and ORACLE. Req: Bachelor's in Computer Science, Computer Engineering, Electrical or Electronic Engineering, Mechanical Engineering, Mathematics or its foreign educational equivalent. Plus 1 year in the job offered or 1 year in a related occupation such as Programmer, Systems Analyst or Software Engineer. \$40,000/yr. 40hrs/wk, 8 AM-5PM. EOE. Employer Paid Ad. Send resume to MJC/ESA, PO Box 11170, Detroit, Michigan, 48211-1170 and refer to Reference No. 166098.

Applied Specialist Provide daily monitoring of production computer systems, support computer applications that provide information to the manufacturing plant floor, design, implement and provide maintenance of Programmable Logical Controller (PLC) control systems, provide technical consulting for UNIX, C, and PLC systems. Requires Bachelors degree in Computer Science or Technology and 1 year experience in the job offered or 1 year as a PLC programmer. 40 hours per week, 8AM to 5PM. Salary \$55,000 per year. Please apply in person with resume in hand to any local Kansas Job Service Career Center or send a job resume to: KS Department of Human Resources, #K59999939, Attention: Jane Burbridge, 401 SW Topeka Blvd., Topeka, Kansas 66603-3182. Applicants must have proof of legal authority to work in the United States.

PROGRAMMER/ANALYST In-house title: Senior Staff Analyst. Multiple positions: 25. Monday rough Friday 8 a.m. to 5 p.m. \$42,089 to \$65,000 annually. Required is a Bachelor of Science or Arts or degree or its equivalent in Computer Science, Engineering, Math, Physics, or Business and one (1) year of experience in the job being offered or one (1) year of related experience as a Programmer and/or Systems Analyst. As equivalent to a baccalaureate degree, employer will accept three years of programming and/or systems analyst experience for each year of formal academic training lacking. Related experience presupposes one (1) year of experience in one or more operating systems; one or more programming languages as well as system bases and with IBM, DEC/VAX, or PC computers. IBM experience requires ops system and language mix from COBOL, PL/I, JCL, IMS DB/DC, DB2, CICS or IDMS or if IBM AS/400-specific experience, AS/400 COBOL, or RPG as well as CL, subfiles, SEU, SDA and DDS are required. DEC/VAX experience requires ops system and language mix from COBOL, C, REXX, PASCAL, BASIC, or FORTRAN. PC experience requires ops system and language mix from dBASE, FoxPro, Access, Clipper, Paradox, or Excel. Must have Client Server experience mix from PowerBuilder, UNIFACE, VB or SmallTalk. In one or more environments involving large systems, mid-range systems or PCs with client-server experience, principles of computer science to analyze data flow for design of business-oriented information systems and for design and writing of the application program for the system. Via the use of databases and applications programs defines and creates data structures for storage of the subjects of master files and associated transaction files that incorporate data entry, updating, query and report processing. Implements testing. Formulates machine procedures to document how data is obtained for the computer on how to perform batch processing activities as well as interactive, realtime processing of batch transactions. In conjunction with customer-dictated design requirements, provides enhancements for new or existing applications. Must have proof of legal authority to work permanently in the United States. Interested applicants, submit two resumes with reference to Case #s C100795, C100796, C100797, C100798 to: Mr. Gerald Gulseth, DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972.

Database Administrator to perform installation and maintenance of DBMS database design using ERWIN and Designer 2000, create new databases using Enterprise Manager & Server Manager table creation & expansion using Enterprise Manager. Perform capacity planning and utilization tracking and perform database reorganization and trouble shooting database errors. Provide scripts for daily database monitoring, physical database review and support using third party tools incl. DBARTISAN. Manage database security & access control. Plan and implement backup and recovery methodologies. Monitor and optimize database performance. Perform software upgrades to higher versions of Oracle software and apply patches. Requires: MS in Comp. or Info Sci. Eng. or related field and 1 yr exp. in the job offered or 1 yr exp. as a Database Analyst. Exp., which may have been obtained concurrently, must include 1 yr. exp. performing database design and creation of new databases and 1 yr. exp. using Enterprise Manager, EOE. 40 hrs/wk, 8:00am to 5:00pm. Salary \$58,600/yr. Send resume (no call) to Candace Albright, CTG Inc., 3010 LBJ Freeway, Suite 500, Dallas, TX 75244-2704.

INFORMATION SYSTEMS MANAGER SINAI, EGYPT

The Multinational Force and Observers, an independent international peacekeeping organization responsible for monitoring the Treaty of Peace between Egypt and Israel, seeks an Information Systems Manager to serve in the Sinai, Egypt. Requirements include: BS degree in computer science, or other degree with equivalent industry certification; meet the requirements of a Novell CNE with a minimum CNA certification; 5 years experience in a managerial capacity implementing and operating LAN and WAN systems including supervisory and administrative duties; familiarity with Database environments desirable. Must be a self-starter with excellent communication skills, fluent written and spoken English. A two year renewable unaccompanied contract including housing, meals and excellent recreational facilities is offered. May be eligible for tax free status. Send full resume, including salary history, citizenship by fax or e-mail to: Chief of Personnel, Fax: 011-3906-5711-9444 (Rome, Italy). Email: email@info.org. The MFO regrets it cannot respond to all applicants.

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Systems Analyst (various jobs throughout the US): Analyze user requirements, design, develop, and implement information systems on AS/400, hardware, OS/400 and RPG/400. Write program specifications, and system documentation. Maintain existing programs. \$7,000/yr. 40 hrs/wk. Mon-Fri 9am-6pm. REQ'D: Bachelor's degree Comp. Sci., Math, M.S., Engineering, Business or other computational or quantitative discipline and 2 yrs exp in job offered. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to: 1117 Trinity, Room 424T, Austin, Texas 78701. JOWTX0611868. AD Paid by an Equal Opportunity Employer.

SOFTWARE ENGINEERS needed for design, programming and implementation of real time systems and software using SAP R/3 and Oracle on UNIX platforms. Masters required in Math, Computers, Engineering or any other related field of study, plus one year of experience. Must have proof of legal authority to work in the U.S. Salary: \$72,000/year for a 40-hour work week. Submit resume or C.V. to The Phila. Job Bank, 444 N 3rd St., 3rd FL, Phila., PA 19123. Job Order #9098051. Ad paid by an Equal Opportunity Employer.

PROGRAMMER ANALYST (J.O.N. 9098205) Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems; and using Visual Basic and SQL Server. Reqs. a Bachelor's Degree (or its foreign educ. equiv.) in Comp. Sci., Sys. Anal., CIS, Comp. Elec'l, Electro. Engg., or Math., plus 1 yr. exp. in the job offered. 40 hr/wk., 9a-5p, \$60,000.00/yr. Send resume along with the reference number - 9098205 to: Philadelphia Job Bank, 444 N. 3rd Street, 3rd floor, Philadelphia, PA 19123.

Software Engineer: Design, develop, implement and maintain the client/server applications using Visual Basic, Power Builder, Sybase/Oracle, SQL, Video-Conferencing, IPX/SPX and TCP/IP. Develop real time biometric security solutions using Visual C++, ODBC, multi-media, CRC and check Sum skills. Provide technical support to specific projects. Req. Master's in Computer science or other closely related discipline plus one year exp. in job offered. Sal \$55k/yr. Resume to: Dilip Tunki, Soft Tech, Inc. 8282 Western Way Circle, Ste. 1110, Jacksonville, FL 32256.

Software Engineers needed to develop software, using C/C++, VC++, X-Windows (Motif), Java (JFC/Swing) on UNIX, Windows 95 & 98, & NT, MacOS, & OS/2; perform other rel. duties as assigned. Sal @ \$50,000/yr., O/T @ \$29.50/hr.; Req's Master's or Equiv. in Comp. Sci. or Rel. Field; travel req'd. Resumes to Jennifer Hansson, Aerotek, Inc., 7301 Parkway Dr., Hanover, MD 21076. ID Ref. No. NRAZ-99-75485.

Senior Software Engineer (2 openings): Design, develop and implement software systems to determine feasibility of design and direct software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience in the job offered or as a computer professional as well as one year of experience using SAP. Masters degree in Computer Science/Applications, Engineering, Chemistry, Math, Physics or a business related field. Will accept Bachelor's degree with five years of experience as computer professional. Salary is \$ 105,000 per yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Terry Kinney, Mgr., Armstrong County Job Center, 1270 N. Water Street, P.O. Box 759, Kintnersville, PA 18021. Reference Job Order No. 7052029.

Consultant: Design, develop & test software applications for Operational Support System Integration (OSI) & related products. Develop interface applications. Tools: C/C++, Oracle, UNIX, Pro* C shell scripts, BS in Comp. Sci. or Electrical Engineering + 1 yr exp in job offered or as Programmer/Analyst required. Previous exp must include: C, C++, Oracle, UNIX, 40hrs/wk, 9am-5pm, \$70,000/yr. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume and cover letter to: Illinois Dept. of Employment Security, 401 S. State St., 7th North, Chicago, IL 60605. Attn: Bert Grunnet. Ref# V-IL, 21244-P. Employer Paid Ad. No calls.

Consultant: Design, develop & implement software for management information systems, Multi-platform integration. Database design & development. Graphical user interface. Tools: AS/400, RPG/400, ASSET MS in C-Comp Sci. + 1 yr exp in job offered or as Programmer/Analyst required. ("MBA in Mgmt Info Systems also acceptable") Prior exp must include: AS/400, ASSET 40 hrs/wk, 9am-5pm, \$59,500/yr. Send resume with Social Security no. to: Indiana Dept. of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277. Attn: Gene R. Reppie. ID# 8048863.

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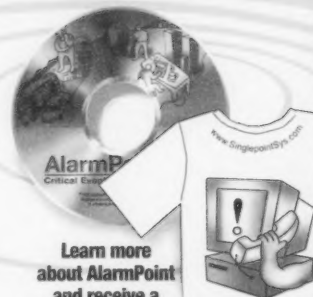
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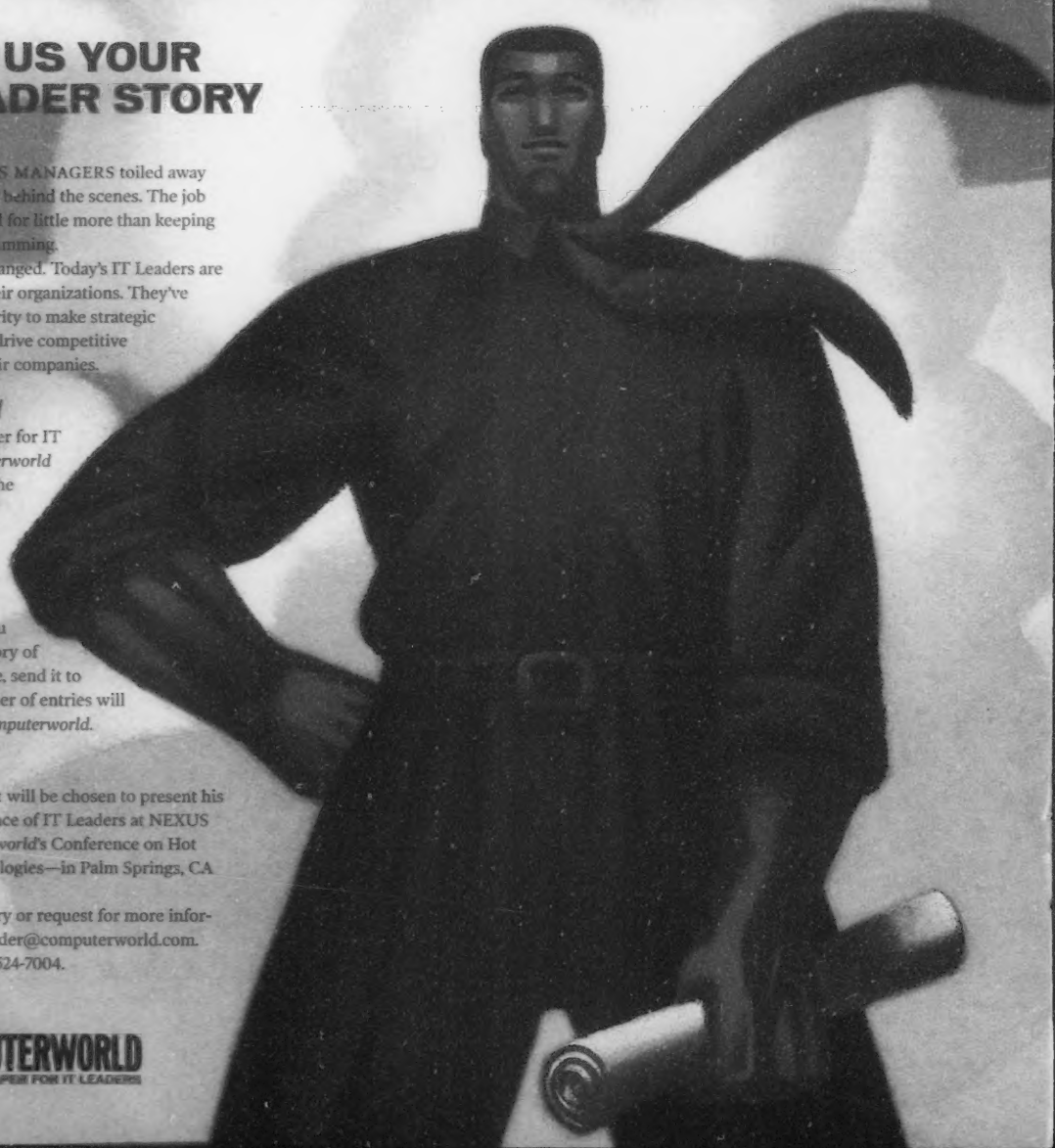
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Web Come-on

by the popularity of the MP3 audio compression format, which allows consumers to encode music from CDs and distribute it on the Internet. Record companies first attempted to quash MP3 but are now groping for their own online sales strategies to shore up their eroding monopoly in music distribution (see related story at right).

MP3 "is making other industries think harder about how they use media," said Scott Dinsdale, chief technology officer and CIO at BMG Entertainment, which owns the BMG record label. "If you are going to offer intellectual property online, you have to think about what you are going to protect, what [the] remuneration should be and who you want to offer [it to] in the marketplace."

Dinsdale is contemptuous of

the growing number of e-commerce vendors that give away unprotected music files, he said, because artists will eventually come back and demand additional remuneration for their freely distributed material. But online music vendors have embraced free, legal music downloads in the same way some software companies release free products to create demand elsewhere.

"Music has been a loss leader for merchandising. Artists really make their money on concerts and merchandising T-shirts," noted Mike Weiss, general manager at Webradio.com.

Howard Tullman, CEO of Tunes.com, said his company is happy to give away MP3 files as a way to collect valuable demographic data on visitors who download the music.

Some vendors compete with pirated music by adding value to their sites. Goodnoise Corp. sells MP3 tracks and albums and offers free tracks as a promotional tool that can lead to

album sales. "We make them easier to buy than steal. If you hear a track, you can push a button and [purchase and] download the entire album," said CEO Robert H. Kohn.

But Dinsdale said he remains unconvinced. "The concept that this will require us to

give something away is a joke," he said. "To suggest that we should abandon profit for the sake of enabling MP3 companies to profit in the stock market is unbelievably hypocritical. They are not producing value."

But Robert Reid, CEO of Lis-

ten.com, said he believes that online companies that offer the best value and let consumers drive their own choices will prosper. "Companies that side with the producers rather than the consumers will be 'rolled' on the Internet," Reid said. "It will happen every time." ■

Consortium Claims Music Spec Secure

A consortium of recording and electronics companies claimed last week that it has developed a specification for portable digital music players and software that will limit the illegal copying of digital music.

But it's still unclear what technology will be used to enforce the copyrights of digitally distributed music or whether makers of playback devices will comply with the standards.

The Secure Digital Music Initiative (SDMI) said the spec calls for a phased approach. Initially, new devices will have to play music in all formats, including MP3.

In Phase 2 of the plan, con-

sumers would "upgrade" those devices to activate a "screening technology" that won't play pirated copies of newly released music. New music would be protected by a digital watermark.

According to SDMI, the specification was adopted by more than 100 companies from the music, consumer electronics and information technology industries. Details will be made public after the spec is ratified by SDMI's governing body on July 7.

One partnership has already announced that next quarter it will test technology to create CDs that comply with the SDMI standard. Bertelsmann AG, the parent company of CD and video DVD recorder maker BMG Stor-

age Media, based in Guetersloh, Germany, has partnered with InterTrust Technologies Corp. and Reciprocal Inc. to develop copyright management systems for digital media.

New CDs would need to work on existing players and let CD owners make copies for personal use, a right protected under the Home Recording Act of 1992.

The initiative was launched by the Recording Industry Association of America, which fears that MP3 has created widespread piracy. But critics charge that SDMI is the music industry's attempt to maintain its grip on music distribution that has been undermined by the Internet and digital playback devices.

—Ann Harrison

Continued from page 1

Pace of Change

Web-site-based satisfaction surveys. Companies that don't quickly respond with products or services run the risk of deletion from customers' electronic bookmark lists.

"Offering something better or new every 60 days is absolutely critical," said Elizabeth Rose, vice president of strategic planning and e-commerce at BMG Direct, an online music club in New York. "If you come back to my site and two weeks later I'm showing you the same stuff, I'm boring. I've got nothing to keep you coming back."

So over the course of 60 days, BMG offers each of its 1.8 million online members no fewer than three different, personalized pricing offers. Customers also receive new, customized buy recommendations on a daily basis, plus a top-sellers' list — based on the previous seven days' sales — that's updated daily.

Direct Hit Technologies Inc., which sells Internet search engine software over the Internet, has been known to launch a half-dozen new product versions within a few days. Enabling that breakneck pace of product rollouts is an incremental software development model under which a project is never really finished.

"The great thing about the Internet is you can release a new product every day. You can release something that works — but not as well as you'd like it to work — and then update it," said Gary Culliss, co-founder and chief technology officer at Direct Hit. "We create a product and do a minimum amount to get it working. You don't build the Taj Mahal all at once."

"Customers are a click away from going to competitors, so we need to refresh our Web stores on a 60- to 90-day basis," said Jerry Miller, CIO at Sears, Roebuck and Co. in Hoffman Estates, Ill.

For example, Sears, which in May began selling appliances online [News, April 19], has since added new content and navigation features to its Web site. In the fall, the retail giant will let customers schedule home delivery of appliances online, Miller said.

"There's a tremendous transformation going on in retail that's being driven by [the Internet]," he said.

All of which can be both exhilarating and exhausting for IT workers.

For example, on the day Frank Sinatra died, BMG's five-person development team worked flat-out to assemble and post a lifetime tribute to the legendary singer, as well as to feature special offers on every one of his recordings — all in six hours.

On Grammy Awards night, the team worked through the night to have the winning recordings ready for online sales the next day.

"We borrowed somebody's

office with a TV, ate dinner together and turned things into a party," Rose said. "We were all there to support the content developers who were pulling together content as the awards were announced."

In the real world, the music club needed four months to put together a paper-based catalog. Prior to moving online, "our best-seller list was effectively a combination of our best guess and what we wanted to promote. We put it in the magazine, but it didn't necessarily reflect what people were buying," Rose said.

Direct Hit is keeping up with the hectic pace by hiring a new developer every other week, Culliss said. "The process here is, we hire a core group of developers, release a product, then hire a [new] group of developers to support it," he said. The original development group then moves on to enhancements or to building other products.

In the financial services industry, "a week doesn't go by" without a big new partnership, alliance or new product offering that has a major impact on the market, said John McKin-

ley, CTO at Merrill Lynch & Co. in New York. Just last month, Merrill Lynch itself rocked Wall Street with its plan to offer low-cost, online trading by December.

Critics have hammered Merrill Lynch in the past few years for failing to react quickly to the online

competitive gains made by rivals such as Charles Schwab & Co. But when Merrill Lynch finally did come up with its strategy, it moved quickly.

In February, the company acquired D.E. Shaw Financial Technology LP, a Cambridge, Mass.-based developer of Internet technologies for the financial services industry. A month later, Merrill Lynch began offering online trading to customers with assets of more than \$100,000. ■



DIRECT HIT'S
Gary Culliss



BMG DIRECT'S
Elizabeth Rose



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Get bloodthirsty

SO NOW YOU KNOW. If you've been waiting for a signal from Capitol Hill about how much legal redress your IT shop will have if software vendors fail to fix their year 2000 bugs, the answer that came last week can be pretty much summed up in two Latin words: *Caveat emptor*. English translation: *You're screwed*. That's the bad news. The good news is that we can now all wake up from any daydreams about

guys the tools they need to shred the competition on a schedule.

Redress? Hah! In the deal Congress and the White House were cobbling together last week (see story, page 12), all the legal threats that were supposed to scare the bejesus out of any Y2K slackers will be legislated out of existence — maybe by the time you read this.

But the truth is, lawyers can't solve our year 2000 problems. All they can do is shake loose some chump change after our business goes down the tubes. That was always true; the action in Washington just makes it official.

And now that we've deep-sixed the lawsuit idea, maybe we can get back to the serious business of turning Y2K fixes into a competitive advantage.

An advantage? Sure. Some of your competitors are ahead of you in the Y2K game. Some are behind you. When zero hour hits, anybody who's not ready won't be able to deliver the goods. That's when your company's sales guys can swoop in and snap up the unfortunate cripple's customers in an instant.

If that sounds rude, crude and maybe even a little bloodthirsty, well, that's salespeople for you. They'll cheerfully cut the throat of a competitor who's suddenly beset with problems. Those troubles usually arrive without much warning — a natural catastrophe, a sudden strike, an unexpected court injunction — and it's tough for the whole business to react fast enough to take advantage of them.

But for once, with Y2K, we know what's coming. We've got a chance to plan for our competitors' catastrophe. We can actually give the sales

guys the tools they need to shred the competition on a schedule.

After all, we have a pretty good idea which competitors are behind the eight ball on Y2K. We hear scuttlebutt. We read the papers. We know who's sitting in the front row at Y2K conferences, nails gnawed to the nubs, scribbling notes like madmen.

Those are the competitors our sales guys can eat for lunch. The salespeople know who the customers are. All they need is a tip — and systems that work.

Now that's IT giving users a business advantage.

So our job is simple. In the next 180 days, we finish fixing our systems. We test them. We test the applications we've bought or leased. We test everything with our suppliers' systems. We don't trust anyone's statements or promises or good-faith efforts. We make sure everything works.

And we make sure our salespeople have all the tools and information they can use at the first hint of a competitor's blood in the water on Jan. 1 — so they can inflict the kind of Y2K damage that even an act of Congress can't fix.

New Year's holiday update: Several readers of last week's column pointed out that banks and financial markets don't plan to take either Dec. 31 or Jan. 3 as a day off, though some markets will close early on Dec. 31. But as one reader — who happens to chair a regional Y2K group for bankers — put it, "I certainly wouldn't

mind other businesses taking a holiday to reduce our transaction volume!"

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

Who knows better than you which competitors are behind the Y2K eight ball?



SHARK TANK

"INSANE MAGIC" is what a Friend of the Tank calls Computer Associates' not-quite-perfect pricing tools. For one potential customer, the list price for installing Unicenter TNG on a 16-processor Sun server was (you're sitting down, right?) \$1.1 million for software and \$217,000 per year for upgrades and support. Sharky's pal calculates he could hire three very well-paid people, shuttle them to and from work in a chartered helicopter — and still beat CA's quoted price.

OH-SO-FINE PRINT. Another Tankster actually read Yahoo's new terms of service. According to Paragraph 6k, Yahoo users are forbidden to even "unintentionally [emphasis added] violate any applicable local, state, national or international law." Oh, and if you're using Yahoo for anything involving investment, the warranty disclaimer and limitation of liability "go doubly for you." So there.

YOU KNOW THAT TV AD showing a guy on New Year's Eve? He snaps instant pictures of an ATM screen just before the system goes haywire from Y2K

and makes him rich. Here in the Tank, we all thought it was pretty funny. Well, seems the American Bankers Association disagreed, and Polaroid is pulling the ad. The bankers' lack of humor was to be expected; Polaroid's lack of guts is a surprise.

WHAT'S THE FOURTH without fireworks, barbecue and... Baan? Sharky hears IT staffers at A-dec, a dental equipment maker in Newberg, Ore., spent the holiday weekend putting in 12-hour days on a Baan upgrade. A-dec's CIO, Keith Bearden, was planning to man the grill. No fireworks, though — the only ones legal in Oregon "are so wimpy that they're not worth buying," Bearden said. Uh-huh. Bet if that installation isn't done by Monday night, there'll be plenty of fireworks.

A PILOT FISH tells Sharky that Raytheon is about to outsource its data center operations, desktop management, e-mail services and help desk to Computer Sciences Corp. Geez, what does that leave — hanging around the watercooler? Keep the Shark busy with e-mail: sharky@computerworld.com

The 5th Wave



... and then one day it hit Tarzan, Lord of Jungle — where future in that?"

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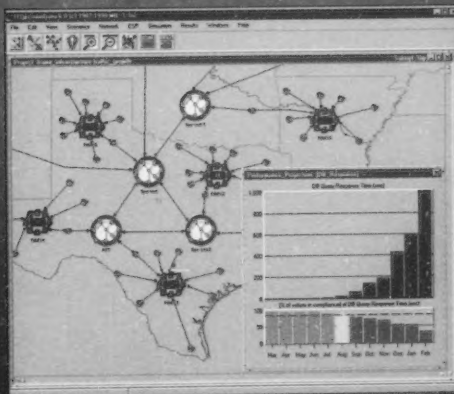
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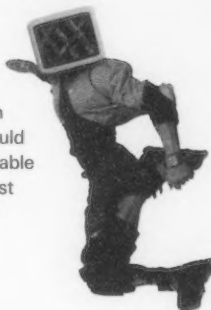
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